ILLUSTRATIONS

OF THE

SALTS OF THE URINE, URINARY DEPOSITS AND CALCULI,

INCLUDING

THE STRUCTURE OF THE KIDNEY IN HEALTH AND DISEASE; MICROSCOPICAL AND CHEMICAL APPARATUS, ENTOZOA, &c.

SEVENTY PLATES,

CONTAINING UPWARDS OF 400 SEPARATE FIGURES, CAREFULLY COPIED FROM THE OBJECTS THEMSELVES.

BY

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PREFACE.

THE number of Plates has been increased from thirty-five to seventy, and there are two hundred and forty-five more figures than in the first edition. Many of the old drawings have been re-engraved, and nearly one hundred new ones have been introduced.

It is hoped that by the aid of the Work in its present form, the Practitioner will be enabled to ascertain the nature of any urinary deposit which may fall under his notice, without difficulty or loss of time.

L. S B.

61, GROSVENOR STREET,
October, 1868.

EXPLANATION OF THE PLATES.

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ILLUSTRATIONS OF URINARY DEPOSITS—EXTRANEOUS MATTERS.

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Plate XIX. Fig. 104. Urate of soda in spherical masses from various parts of the circumference of which minute acicular crystals of uric acid project. Fig. 105. Urate of soda in a globular form, commonly found in the urine of children. Fig. 106. Crystals of ammoniaco-magnesian phosphate with mucus and mucous corpuscles. Fig. 107. Prismatic crystals of triple phosphate showing their form. Fig. 108. Triple or ammoniaco-magnesian phosphate from acid urine. Fig. 109. Urate of soda prepared artificially. Fig. 110. Rare form of urate of soda, from the urine of a patient suffering from peritonitis, p. 354.

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Plate XXI. Fig. 113. Crystals of triple phosphate formed by the addition of ammonia to urine. Fig. 114. Crystals of phosphate of lime occasionally met with in urine. Fig. 115. Drawing of a urinary deposit consisting of crystals of phosphate of lime and numerous octahedra of oxalate of lime, with mucus. Fig. 116. Phosphate of lime in the form of dumb-bells, from the mucus of the gall bladder. Fig. 117. Unusual form of triple phosphate. From the urine of a patient suffering from indigestion in the very hot weather. Fig. 118. Large dumb-bells of phosphate of lime, p. 358.

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chloric acid to urine. Fig. 163. Small crystals of uric acid massed together so as to form a plate, p. 384.

late XXX. Fig. 164. Quadrilateral pyramidal crystals of uric acid, precipitated from urine by nitric acid. Fig. 165. Uric acid, from the urine of a case of fatty degeneration of the kidneys. Fig. 166. Less common forms of uric acid crystals: *a*, Cayenne pepper-like grains; *b*, six-sided crystals; *c*, mass with small uric acid crystals projecting from it; *d*, small pyramidal crystals of uric acid very uncommon; *e*, peculiar forms of uric acid. Fig. 167. Irregularly shaped crystalline plates consisting of uric acid, from urine. Fig. 168. Two forms of uric acid, p. 384.

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'late XXXIII. Fig. 181. Modified form of triple phosphate or phosphate of lime and triple phosphate. Fig. 181*. Octahedra and dumb-bells of oxalate of lime and curious forms of fungi found in the urine of a young man passing much oxalate of lime. Fig. 182. Collections of dumb-bells firmly adherent to each other. Fig. 183. Minute crystals of oxalate of lime with sporules of fungi resembling blood corpuscles. Fig. 184. Dumb-bells subjected to the prolonged action of acetic acid showing the crystalline material nearly dissolved away. Fig. 185. Perfect dumb-bell crystals from the urine of a child suffering from jaundice. Fig. 186. Dumb-bell crystals of oxalate of lime aggregated together, forming a minute calculus. Fig. 187. Spherical, oval, and dumb-bell crystals, p. 384.

'late XXXIV. Fig. 188. Crystals of cystine from the urine of an insane patient. Fig. 189. Crystals of cystine. Fig. 190. Clusters of crystals of cystine formed by evaporating a solution of the crystals represented in fig. 188 in ammonia. Fig. 191. Very small six-sided crystals of cystine formed by gently evaporating a solution of the crystals represented in fig. 188 in ammonia. Fig. 192.

Irregularly formed crystals of cystine. Fig. 193. Crystals of carbonate of lime seen by reflected light. Fig. 194. Blood corpuscles: *a, b, c,* taken from the living body; *d, e, f,* from the urine; *d,* corpuscles smaller than natural; at *e* their circumference is serrated and ragged, and also at *f.* Fig. 195. Large cells filled with granular matter in the urine of a case of chronic bronchitis. Fig. 196. Crystals of carbonate of lime in Canada balsam, appearance with transmitted light. Fig. 197. Tubercle corpuscles from a tubercle in the lung. Fig. 198. Cells found in the urine of a case of renal dropsy. Fig. 199. Cells found in the urine of a child, age 14, suffering from hæmorrhage. Fatty degeneration, 7 months. Fig. 200. Altered blood, menstrual fluid, p. 383.

Plate XXXV. Fig. 201. Rhomboidal and feathery crystals of hæmatoidin, from a softened clot. Human. Fig. 202. Feathery crystals of hæmatoidin found in the urine a fortnight after slight rupture (?) of one kidney. Human subject. Fig. 203. Cancer cells from the urine in a very bad case of cancer of the uterus. Fig. 204. Cancer cells from a case of cancer of the bladder. Found in the urine. Fig. 205. Cells from the urine of a case of acute rheumatism: *a,* in the natural state; *b,* treated with acetic acid; *c,* resembling pus; *d,* the same treated with acetic acid. The small circular bodies are blood corpuscles. Fig. 206. Blood in the form of irregularly shaped clots from the vagina, p. 394.

ENTOZOA.

Plate I. Fig. 1. Layers of which the wall of an hydatid cyst is composed. Fig. 2. Echinococci from hydatid liver of ox. Fig. 3. Echinococci. Fig. 4. Free hooklets of echinococci. Fig. 5. Hooklet of echinococcus. Fig. 6. Tenia echinococcus. Fig. 7. Diptoloma crenata half the real size. Fig. 8. Ova of bilharzia hæmatobia found in urinary deposit. Fig. 9. An ovum of bilharzia hæmatobia highly magnified. Fig. 10. Ova of bilharzia hæmatobia. Fig. 11. Bilharzia hæmatobia, after Bilharz, p. 402.

URINARY CALCULI.

Plate I. Fig. 1. Large uric acid calculus consisting of concentric layers of uric acid deposited upon a smaller calculus composed of oxalate of lime. Fig. 2. Beautiful example of oxalate of lime calculus, the surface of which is of a pale brown colour, and the tubercles small and delicate. Fig. 3. Mulberry calculus which was of a rich plum colour. Fig. 4. Small prostatic calculi. Fig. 5. Large mulberry calculus two-thirds the real size. Fig. 6. Phosphatic calculus. Fig. 7. Blood calculus from the infundibula of the kidney. Fig. 8. One large and two small blood calculi from the pelvis of the kidney. Fig. 9. Phosphatic calculus, the nucleus composed of a small uric acid calculus. Fig. 10. Small calculi from the kidney. The nuclei composed of soft granular material, probably disintegrated epithelium. Fig. 11. Very small calculi from the follicles of the prostate gland, p. 416.

Plate II. Fig. 12. Small compound oxalate of lime calculus found in the urine of a young man who was passing numerous dumb-bells of

oxalate of lime and crystals of uric acid. Fig. 13. Compound oxalate of lime calculus from the same case as that shown in fig. 12. Fig. 14. Urinary deposit consisting of crystals of triple phosphate, and smooth and irregularly shaped oxalate of lime calculi passed in immense numbers from a gentleman suffering from symptoms of renal calculus. Fig. 15. The same calculi as shown in fig. 14 after being treated with acetic acid. The nuclei and concentric layers of each individual calculus have been rendered beautifully distinct, p. 420.

Plate III. Fig. 1. A calculus which had undergone spontaneous fracture in the bladder. Figs. 2 and 3. Portion of a calculus which had separated before removal. Fig. 4. Another calculus which had undergone spontaneous fracture, p. 434.

STRUCTURE OF THE KIDNEY.

Fig. 1.

Diagram showing the general anatomy of the human kidney as seen upon section. About two-thirds the natural size. The scale at the side is divided into eight spaces representing half-inches. p. 2.

Fig. 2.

Thin section of a portion of the human kidney. *a*, cortical; *b*, medullary portion; *c*, pelvis; *d*, infundibulum; *e* opening of an infundibulum into pelvis; *f*, calyx; *g*, pyramid; *h*, mamilla or papilla; *i* adipose tissue; *k*, large veins divided in making the section. Small arteries are also seen cut across in different parts of the section, some large branches being situated between the cortex and the medullary portion of the organ. p. 3.

Fig. 3.

The secreting portion of the human kidney, showing the uriniferous tube, *k*, commencing in a flask like dilatation, *a*, *i*, which embraces the capillary vessels of the Malpighian tuft; *b*, a branch of the artery, afferent vessel, which enters the Malpighian tuft. *c* the vein or efferent vessel. × about 50. p. 5.

[To face page

STRUCTURE OF THE KIDNEY.

PLATE II.

Fig. 4. Part of the cortex, with the commencement of the medullary portion of the kidney, magnified 15 diameters. *a.* Branches of artery. *b.* Afferent vessels of tuft. *c.* Malpighian tufts. *d.* Efferent vessel of tufts. *e.* Network of capillaries, into which the blood, after having traversed the capillary loops of the tuft, is carried. *f.* Small radicles of renal vein, by which the blood is returned to the large trunks. *g.* Long and almost straight vessels (*vasa recta*), into which the efferent vessel of those tufts situated at the bases of the pyramids, divides. These straight vessels may be traced for some distance towards the apex of the cone. *h.* Veins in the same situation, which return the blood to the large venous trunk, *i.* *k.* Capillary network in the pyramids. *l.* Portion of the capillary network of the cortex, where the meshes are elongated, corresponding to the direct course which many of the uriniferous tubes take, at regular intervals, in the cortex. *m.* Network of other parts of the cortex, in which this arrangement is not observed, *n.* Malpighian bodies not injected. *o.* Convoluted portion of uriniferous tube. *p.* Tubes having a direct course towards the cones, situated at regular intervals through the cortex. At *l* would be situated another parcel, and at *q* a third. The arteries pass in the intervals between these, as represented. *q.* One of the tubes isolated. I have never been able to demonstrate the branches represented, in the human subject, but from their existence in some of the lower animals, it is probable that a similar arrangement may be found in the higher. The branches *r* must therefore be considered merely diagrammatic. *r.* Branches continuous with the convoluted portion. *s.* Wavy portion of uriniferous tube, at the commencement of the cones. *t.* Capsule of kidney. *u.* Uriniferous tube, with Malpighian tuft and capillary vessels complete. *v.* Capillary network, with fragments of uriniferous tubes, from which the epithelium has been washed out (the so-called *matrix* of the kidney).

Fig. 5. Uriniferous tube, with dilated extremity, which embraces the vessels of the Malpighian tuft. The epithelium is seen in the convoluted portion of the tube, but cannot be traced within the capsule in the human subject.

Fig. 6. Small artery, with tuft and capillary network, accurately copied from a specimen. The artery is seen to divide into three or four branches, and each of these gives off capillary loops, which divide and subdivide for some distance before they communicate with those of another division. The letters refer to the same parts as indicated in fig. 1. Every part of fig. 1, with the exception of *q*, *r*, has been copied from actual specimens, prepared from a number of kidneys. The separate drawings thus obtained have been grouped in their proper position, in order to complete the drawing. Fig. 5 is partly copied from nature. Fig. 6 is entirely traced from a preparation. The injection employed for making the specimens was the Prussian blue fluid.*

* "How to work with the Microscope."

ANATOMY OF KIDNEY

Plate II

STRUCTURE OF THE KIDNEY.

PLATE III.

EPITHELIUM OF URINIFEROUS TUBE, PELVIS OF THE KIDNEY, URETER, AND URETHRA.

Fig. 7. Convoluted portion of uriniferous tube with epithelium, from the cortical portion of the kidney. *a.* Basement membrane. *b.* Epithelium. *c.* Part of tube from which the epithelium has been squeezed out, leaving only the basement membrane. *d.* Capillary vessels containing transparent injection, showing their relation to the wall of the tube. *e.* Separate cells of epithelium magnified 403 diameters.

Fig. 8. Straight portion of uriniferous tube from the base of a pyramid. *a.* Basement membrane. *b.* Epithelium. *c.* A tube from which the epithelium has been removed. *d.* One of the large straight vessels found among the tubes in the pyramids. *e.* Capillaries also present in this part of the kidney. *f.* Separate epithelial cells magnified 403 diameters.

Fig. 9. Epithelium from the pelvis of the kidney, in part tessellated (*a*) and in part columnar.

Fig. 10. Epithelium scraped from the surface of a pyramid.

Fig. 11. Epithelium from the ureter, entirely columnar.

Fig. 12. Columnar epithelium from the urethra.

The specimens from which all these drawings were copied, were taken from the organs removed from the body of a man, aged 40, who died of pneumonia, otherwise healthy.

The vessels of part of the kidney were injected with Prussian blue fluid,* in order that the relation of the capillaries to the uriniferous tubes might be distinctly made out. The character of the epithelium lining the convoluted portion of the uriniferous tube is represented at *e* (fig. 7). Generally, the cell does not exhibit a distinct outline as is usually represented, although, on the contrary, the outline of the nucleus is often sharp and well defined. The material around the nucleus usually appears granular, and I am not satisfied as to the existence of a distinct cell-membrane. The nuclei are very large, and may easily be mistaken for the entire cell. The epithelium in the straight part of the uriniferous tube in the medullary portion of the kidney is flatter, and its outline is more distinct. In the cortex, the epithelium takes part in *secretion*, but in the medullary portion of the organ it probably corresponds to the epithelium of the *ducts* of glands generally. Many vessels in this part of the kidney pursue a very straight course, and are of large size, their diameter being equal to, or even greater than, that of the tubes, *d* (fig. 8).

* For the composition of this fluid, *see* "How to work with the Microscope."

Plate III

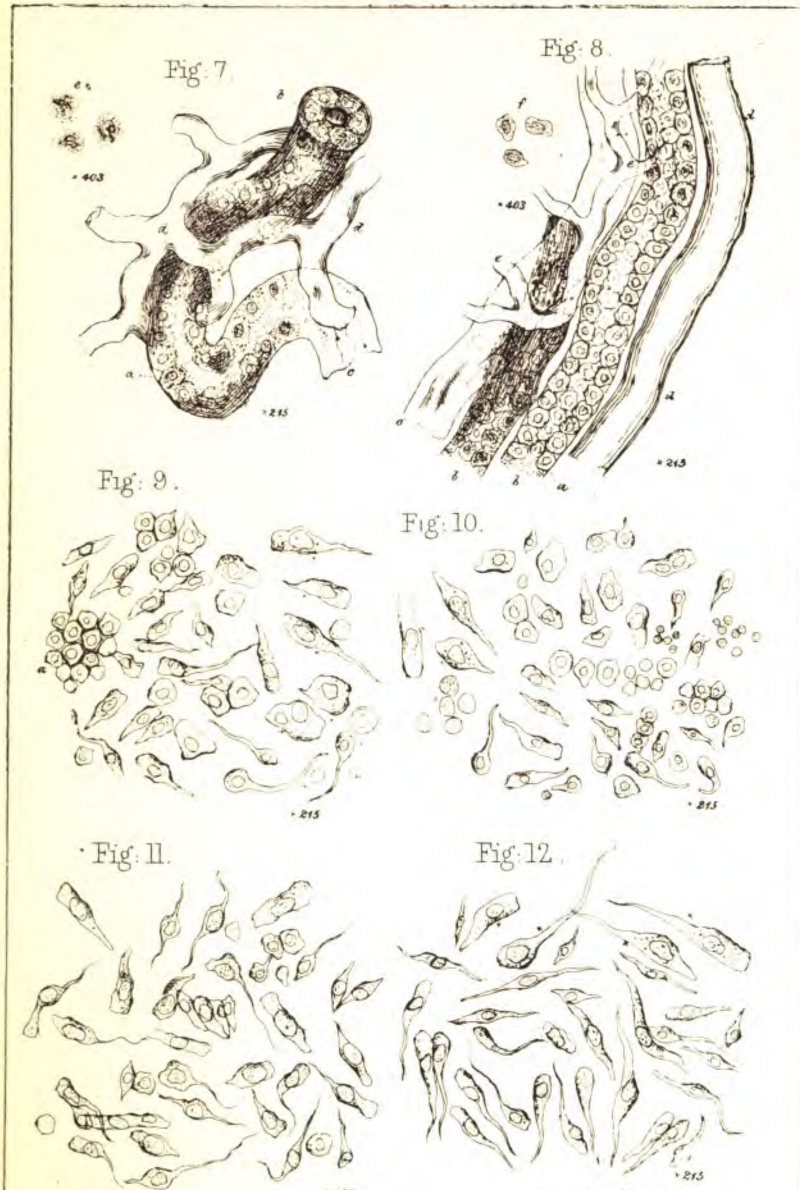


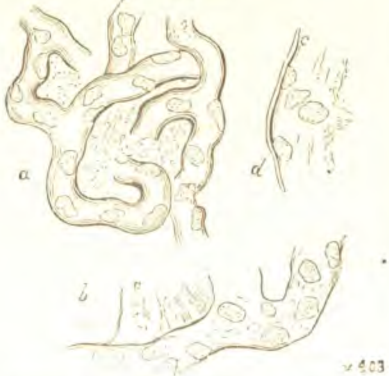
Fig. 7.
Fig. 8.
Fig. 9.
Fig. 10.
Fig. 11.
Fig. 12.
magnified 403
1000 ths
1000 ths
403
215
Path. Lab. 1858

STRUCTURE OF THE KIDNEY.

Fig. 13.

Vasa recta in the pyramidal portion, and Malpighian bodies in the cortical portion. At about the point of union between cortical and straight portions of kidney. p. 7.

Fig. 14.



Capillary vessels from Malpighian tuft of human kidney, showing the nuclei connected with their walls. *a*, a few coils separated from the rest of the tuft. *b*, part of a loop somewhat compressed, showing the nuclei a little flattened. *c*, tissue which connects the coils with each other, by which the globular form of the tuft is preserved even when it is removed. *d*, a small portion of a capillary compressed as much as possible, showing thickness of capillary wall at the point of reduplication. p. 8.

Fig. 15A.

Uriniferous tube bent upon itself at *a* in the pyramid of the kidney. The looped tube of Henle. p. 10.

Fig. 16.

Epithelium from a uriniferous tube. Human kidney. *a*, treated with acetic acid. p. 13. × 215.

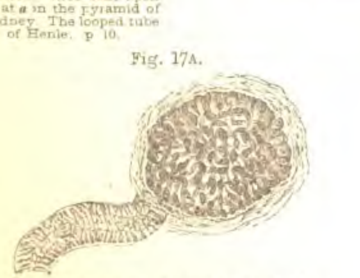
Fig. 17.

Epithelium from the pelvis of the healthy human kidney. p. 14. × 215.

Fig. 15.

Thin section of healthy human kidney, slightly washed in water. *a*, convoluted portion of uriniferous tube. *b*, portion of a tube stripped of its epithelium. *c*, outline of tube and crumpled capillaries, having a fibrous appearance—the so-called matrix. *d*, very small Malpighian body; loops of vessels shrunk, showing cells in their walls. × 215. pp. 18, 20.

Fig. 17A.



Young and growing Malpighian body of a child, age 2½ years. The muscular fibre cells are seen on the small artery quite close to the Malpighian body. × 215.

Fig. 18.

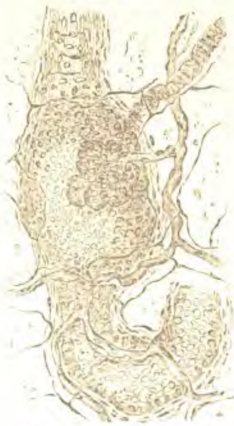
Epithelium from the ureter. p. 14. × 215.

[To face page 12

Fig. 19.

A part of the convoluted portion of a uriniferous tube from the newt's kidney showing capillary vessels and nerve fibres, and the thickened basement membrane continuous in structure with the connective tissue.
× 215. pp 18, 19.

Fig. 19A.

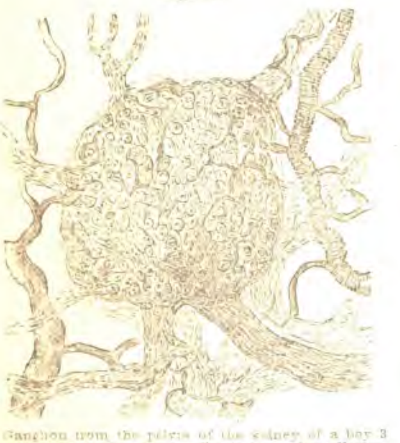


Malpighian body and tube of the newt's kidney
× 130. pp 18, 19.

Fig. 20.

Ganglion [illegible] of kidney. [illegible] *a*, a small nerve [illegible]

Fig. 21.

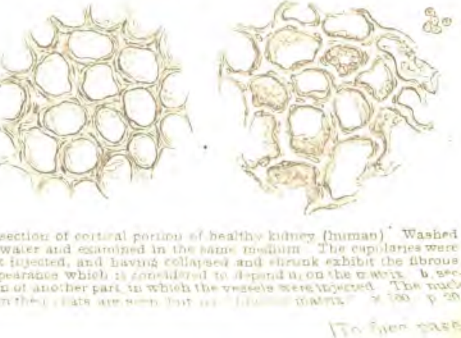


Ganglion from the pelvis of the kidney of a boy 3 years of age, showing small arteries and capillaries, nerve cells and bundles of nerve fibres. × [illegible] p. 18.

Fig. [illegible]

Delicate nerve fibres entering into the formation of the bundles connected with the ganglia of the kidney, showing their arrangement and their nuclei.
× 700. p. 45.

a Fig. [illegible] *b*



a, section of cortical portion of healthy kidney (human). Washed in water and examined in the same medium. The capillaries were not injected, and having collapsed and shrunk exhibit the fibrous appearance which is considered to depend upon the matrix. *b*, section of another part, in which the vessels were injected. The nuclei on the [illegible] are seen but no "[illegible] matrix." × 180. p. 20.

STRUCTURE OF THE KIDNEY.

Plate VI.

Fig. 24. Section of the cortical portion of a human kidney, the vessels of which have been injected with the Prussian blue solution. *a.* Membrane of the tubes. The *a* to the right of the figure shows the position of a Malpighian body: *b* a portion of a capillary loop of a Malpighian body: *c* venous capillaries lying between the uriniferous tubes. In many places the double shaded line indicates the basement membrane of the tubes: *d* position of the uriniferous tubes.

Fig. 25. Transverse section at the base of a pyramid.

Fig. 26. A similar section a short distance lower down, showing sections of the uriniferous tubes. The small tubes join the larger ones at a point lower than that at which the section is made.

Fig. 27. Section nearer the apex of the pyramid.

Fig. 28. Apex of a pyramid showing the manner in which the uriniferous tubes open into the pelvis of the kidney.

[*To follow Plate V.*

Plate VI

Fig. 24.

Fig. 25.

Fig. 26.

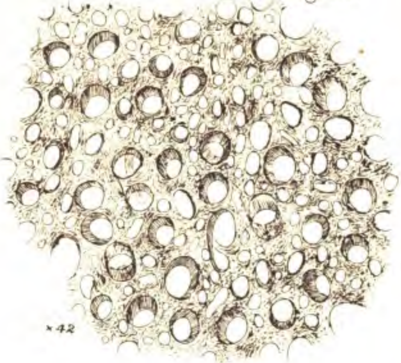


Fig. 27.

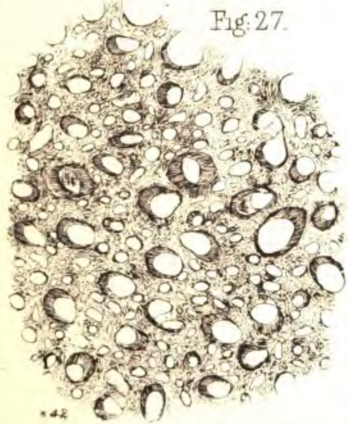


Fig. 28.

100 ths ×42

1000 ths. ×130

L.S.B. Path. Lab. 1858

STRUCTURE OF THE KIDNEY.

Fig. 29.

Uriniferous tubes, some of which are choked with a deposit consisting of albuminous matter and blood. × 30. p. 12.

Fig. 30.

Transverse section of the tubes of the kidney of a snake occupied by large crystals of uric acid. × 20. p. 12.

Fig. 31.

Crystals of leucine in the substance of kidney. Human subject. × 30. p. 12.

Fig. 32.

Crystals of leucine more highly magnified. From the same specimen. × 215. p. 12.

Fig. 33.

A small portion of the small ganglion represented in Fig. 21, Plate V., but magnified 700 diameters, showing ganglion cells and their connexion with the nerve fibres. p. 15.

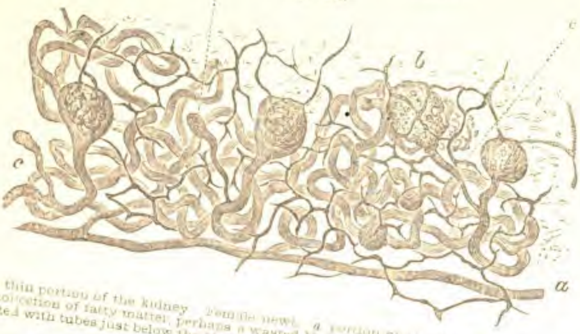
Fig. 34.

Tubes of human kidney. With earthy phosphates precipitated amongst the cells. × 215. p. 12.

Fig. 35.

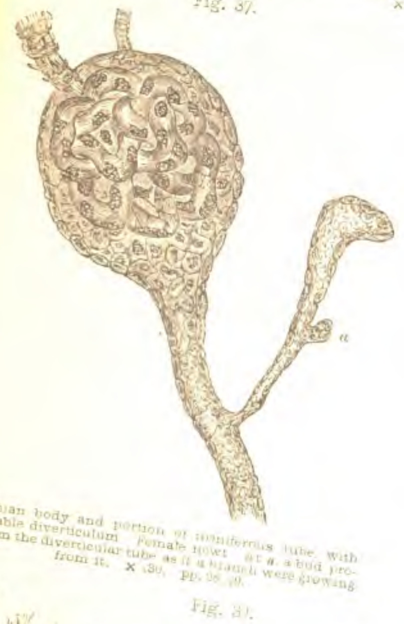
a, portion of uriniferous tube; *b*, capillary vessel; and *c*, nerve fibres. Kidney, child, age 3. × 700. p. 21.

Fig. 36.



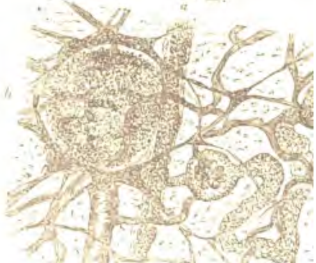
Part of the thin portion of the kidney. Female newt. *a* portion of straight tube continuous with ureter. *b* collection of fatty matter, perhaps a wasted Malpighian body. *c c*, remarkable diverticula connected with tubes just below the Malpighian body. The capillaries are also represented. × 40. p. 28.

Fig. 37.



Malpighian body and portion of uriniferous tube, with remarkable diverticulum. Female newt. At *a*, a bud projects from the diverticular tube as if a branch were growing from it. × 130. pp. 38, 39.

Fig. 38.



Tube, *a*, containing spermatozoa, from which some Malpighian bodies and uriniferous tubes [illegible] of the male newt are developed. [illegible] which has undergone degeneration [illegible] ganglion cells are also seen at *b*. × [illegible] p. [illegible]

Fig. 39.

Distribution of nerves and ganglia over thin part of the kidney of male newt. *a*. vas deferens; the uriniferous tubes opening into it. *b* artery. *c* vein. The numerous ganglia and nerve fibres are seen ramifying over the vessels and tubes. × [illegible]

1-66.

Fig. 40.

Diverticulum from tube, kidney, male newt. p. 36.

Fig. 41.

Tube containing spermatozoa showing the connection with uriniferous tubes and Malpighian bodies. One of the latter is double. Male newt. × 40.

STRUCTURE OF THE KIDNEY.

Fig. 42.

Tube of kidney of female newt, part of which has undergone degeneration and wasting. The healthy portion of the tube is seen to the right of the figure. Nerve fibres are also seen in some places. × [illegible]. p. 31.

Fig. 43.

× 700

a, portion of a capillary vessel of the kidney, distended with altered white blood corpuscles. *b*, round flattened cells, from inner surface of capsule of the Malpighian body. *c*, nucleus of capillary wall. Acute suppurative nephritis. p. 45.

Fig. 44.

× 700

Portion of a cast magnified 700 diameters, with cells in the central part resembling white blood corpuscles or pus corpuscles, which have probably multiplied while they were entangled in the coagulable material of the cast. p. 49.

Fig. 45.

Casts containing cells like pus and blood corpuscles. Acute suppurative nephritis. Three days before death. p. 49.

Fig. 46.

Small casts formed in the convoluted portion of the uriniferous tubes, which have become imbedded in transparent material during their passage down the straight portion. × 60. p. 49.

Fig. 47.

tion of a cast, with distinct
s, showing nuclei and gra
lar contents. Acute nephritis.
× 700.

Fig. 48.

Bodies found between the ca
pillaries of the Malpighian body
and the walls of the capsule.
Case of acute suppurative ne
phritis. × 700.

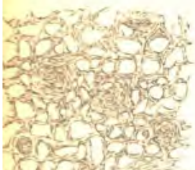
Fig. 49.

A portion of one of the capillary loops of a
Malpighian body, distended with modified
white blood corpuscles. × 700.

Fig. 50.

Separate cells found in the urine. Case of
acute suppurative nephritis. × 700.

Fig. 51.

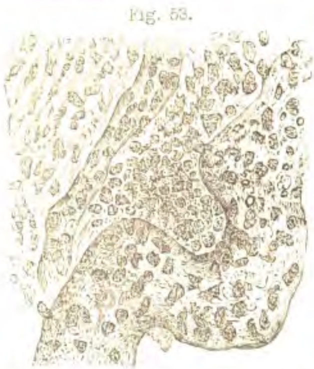


alpighian bodies, showing
ifferent degrees of wasting.
× 40. p. 59.

Fig. 52.

Tubes of the kidney degenerated
and wasted. × 215. p. 54.

Fig. 53.



Multiplication of masses of germinal matter
about tubes prior to wasting. × 215. p. 53.

Fig. 52*.

b-bell crystals of oxalate of lime impacted in the
s of a kidney, forming minute calculi. × 215. p. 12.

Fig. 54.

Portion of a tube from the cortex of the kidney of
healthy (?) cat, containing much oil. × 215. p. 50.

Fig. 55.

Malpighian body and portions of uriniferous tubes, with capil
lary vessels, containing much oil. From a kidney of a diabetic.
× 215. p. 60.

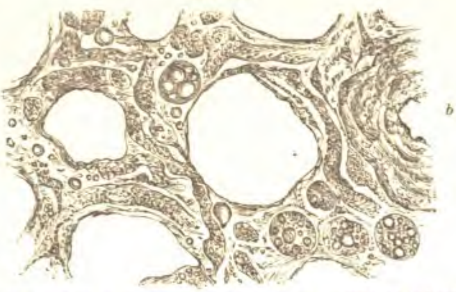
(To follow PLATE IX.)

[*To follow Plate V.*

Fig. 56

a, wasting tube, with oil globules in the interior. *b*, a tube containing transparent waxy cast, with germinal matter resulting from altered epithelium. Fatty and contracting kidney. × 215.

Fig. 57.

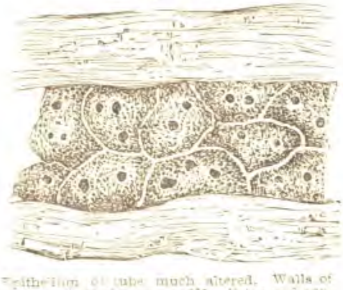


A thin section of the cortex of a fatty and contracting kidney, showing the remains of tubes and vessels in what is generally considered as the "matrix." *a* the remains of a tube appearing as a connective tissue corpuscle. *b* small artery with thickened walls × 215. pp. 70 64

Fig. 58.

Section of cortex of fatty and contracting kidney. × 130. p. 64

Fig. 59.



Epithelium of tube much altered. Walls of tube much thickened. × 700. Fatty and contracting kidney. p 65

Fig. 61.

Capillaries, Malpighian body. Fatty and contracting kidney. Bacteria are seen in the interior of the vessel, the walls of which are very much thickened × 700

Fig. 60.

Loops of vessels of the Malpighian tuft, distended with granular matter, and containing oil globules × 15 p. 65

Fig. 63.

Portion of altered tube, with a bud growing from it. Fatty and contracting kidney. × 100. p 56.

Fig. 62.

Portion of very transparent matrix, showing the remains of uriniferous tubes Fatty and contracting kidney × 700. p. 66.

Fig. 63*.

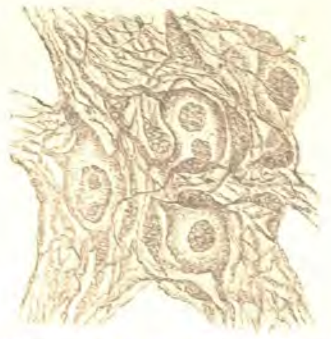
Section of uriniferous tubes in various stages of wasting and degeneration. Fatty and contracting kidney. In some of the tubes there is much oil. × 215.

[To face page 64

Fig. 29.

Uriniferous tubes [illegible] albuminous [illegible] × 30. p. 12.

Fig. 33.



A small portion of the same ganglion represented in Fig. [illegible], Plate VI., but magnified [illegible] diameters, showing ganglion cells and their connexion with the nerve fibres. p. [illegible]

Fig. 34.

Tubes of human kidney. With earthy phosphates precipitated amongst the cells. × 215. p. 12.

Fig. 30.

Transverse section of the tubes of the kidney of a snake occupied by large crystals of uric acid. × [illegible] p. 12.

Fig. 31.

Crystals of leucine in the substance of kidney. Human subject. × 30. p. 12.

Fig. 32.

Crystals of leucine more highly magnified. From the same specimen. × 215. p. 12.

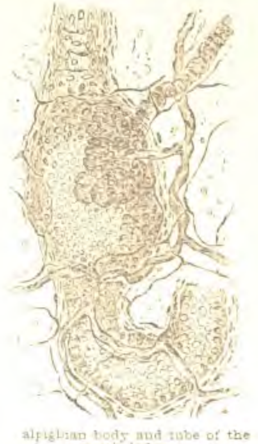
Fig. 35.

a, portion of uriniferous tube; b, capillary vessel; and c, nerve fibres. Kidney, child, aged [illegible]. × 100. p. [illegible]

Fig. 19.

A part of the convoluted portion of a uriniferous tube from the newt's kidney, showing capillary vessels and nerve fibres, and the thickened basement membrane continuous in structure with the connective tissue.
× 215. pp. 16, 19.

Fig. 19A.



alpighian body and tube of the newt's kidney.
× 130. pp. 16, 19.

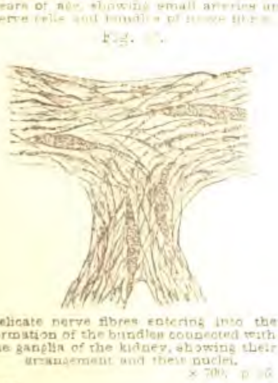
Fig. 20.

[illegible] × 215. p. 18.

Fig. 21.

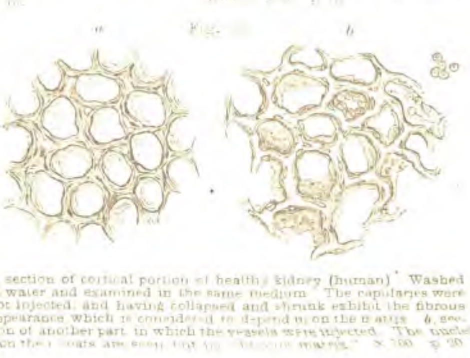
Ganglion from the pelvis of the kidney of a boy 3 years of age, showing small arteries and capillaries, nerve cells and bundles of nerve fibres. × [illegible] p. [illegible]

Fig. [illegible]



Delicate nerve fibres entering into the formation of the bundles connected with the ganglia of the kidney, showing their arrangement and their nuclei.
× 700. p. 20.

a Fig. [illegible] b



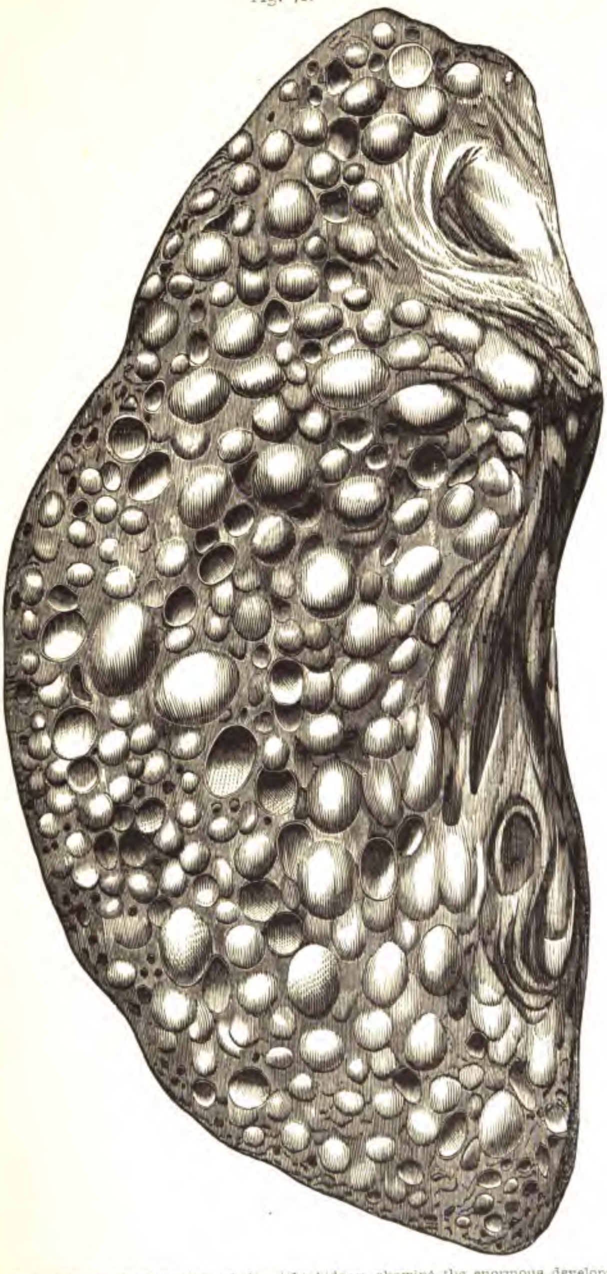
a, section of cortical portion of healthy kidney (human). Washed in water and examined in the same medium. The capillaries were not injected, and having collapsed and shrunk exhibit the fibrous appearance which is considered to depend upon the matrix. b, section of another part in which the vessels were injected. The nuclei on their coats are seen, but [illegible] matrix." × 200. p. 20.

1866.

[To face page [illegible]]

DISEASES OF THE KIDNEY.

Fig. 75.



Full-size representation of section of the right kidney, showing the enormous developmen cysts throughout its substance. The presence of these growths is evidently due to intra-ute disease of the fœtus. From a drawing by Dr. J. Jardine Murray. p. 70

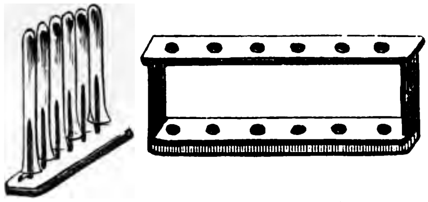
[To fa

CHEMICAL AND MICROSCOPICAL APPARATUS.

Fig. 1.

Conical glass for allowing deposits from fluids to subside. p. 92.

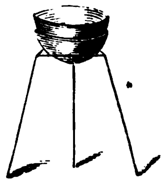
Fig. 2.



Test tubes, rack, and drainer. p. 92.

Fig. 3.

Fig. 4.

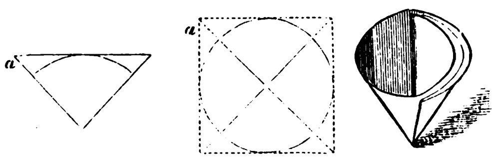


Wire triangles for supporting platinum capsules or foil while the organic matter is being burned off. p. 92.

Fig. 5.

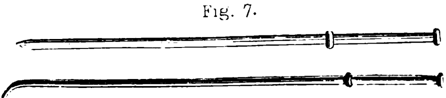
Wash bottle for washing precipitates, &c. p. 93.

Fig. 6



Represents the mode of folding the paper used for filtering purposes. p. 93.

Fig. 7.

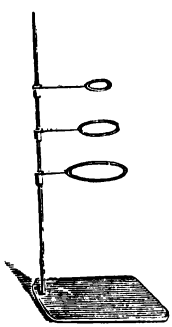


Pipettes. p. 93.

Fig. 7*.

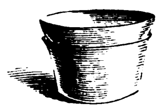
Pipette forming stopper p. 99.

Fig. 8.



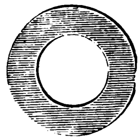
Small retort stand. p. 92.

Fig. 9.



Simple form of water bath.

Fig. 10.



Ring used as an adapter for fitting various sized basins to the simple water bath. p. 92.

Fig. 11.

Spirit lamp p. 92.

[To face page

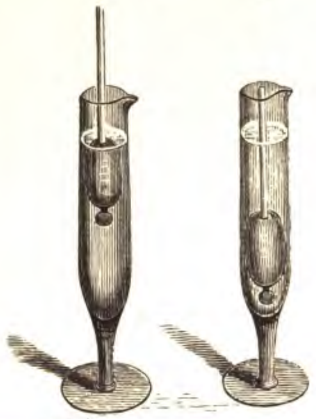
CHEMICAL AND MICROSCOPICAL APPARATUS.

Fig. 12.

Retort stand, funnel, and beaker, arranged for filtering. p. 94.

Fig. 13.

a b



Glasses of convenient form, both for obtaining the specific gravity of fluids and also for collecting the deposits from fluids p. 92.

Fig. 16.

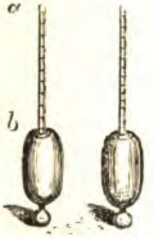
Bottle, with capillary orifice. p. 97.

Fig. 14.

A B

a

b



Urinometers for ascertaining the specific gravity of fluids p. 93.

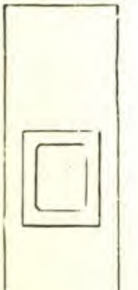
Fig. 15.

Bottle for finding the specific gravity of fluids by weight p. 93

Fig. 17.

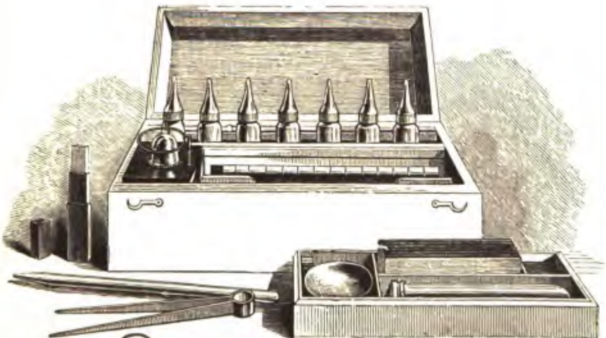
Animalcule cage, also used for examining urinary deposits, &c, under the microscope. p. 97.

Fig. 18.



Simple glass cell for examining of urinary deposits. p. 97.

Fig. 19.

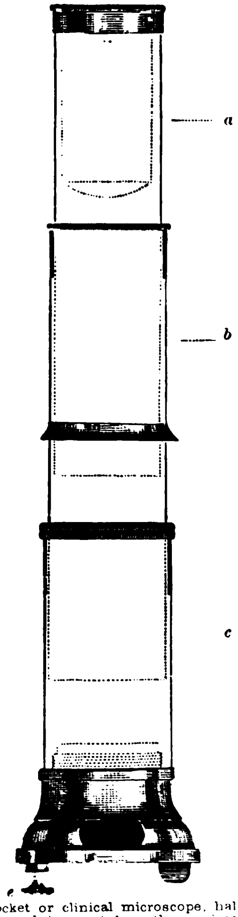


Box containing bottles with capillary orifices, spirit lamp, urinometer and glass, and other appliances and apparatus necessary for minute testing. p. 97.

[To face page 94

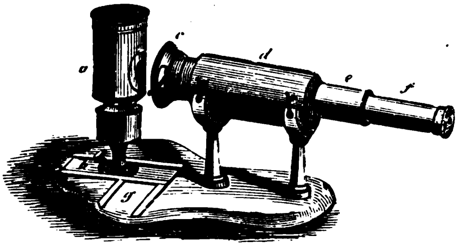
CHEMICAL AND MICROSCOPICAL APPARATUS.

Fig. 20.



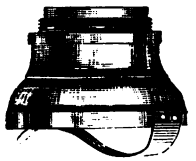
Pocket or clinical microscope, half the real size *a*, tube with eye piece. *b*, tube carrying object glass. *c*, tube in which the last slides with stage. *e*. clamp for fixing preparation p. 95.

Fig. 21.



Clinical microscope with stand, and lamp, as arranged for class purposes p 95.

Fig 22.

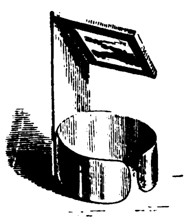


The stage, side view of the clinical microscope, showing position of the spring. p. 95.

Fig. 23.

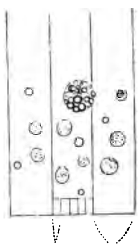
Sectional view of cell for examining urinary deposits. p 97.

Fig. 24.



Neutral tint glass reflector. p 97.

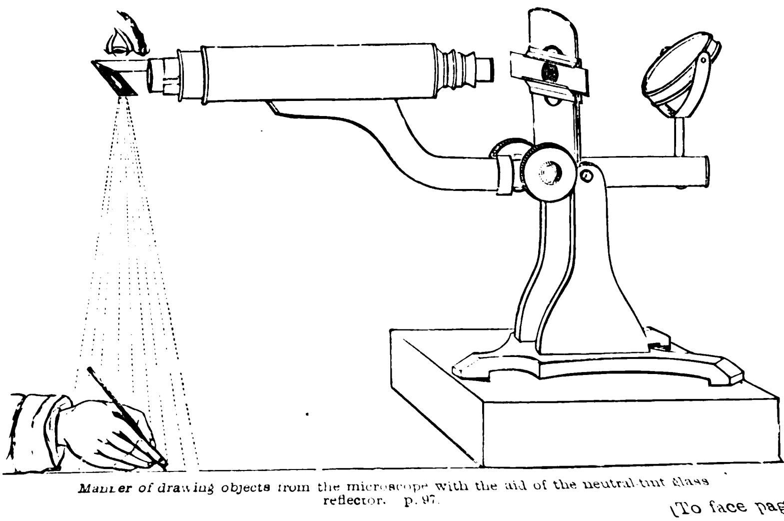
Fig. 25.



$\frac{1}{5000}$ $\frac{1}{1000}$

Scale divided into 1000ths of an inch and magnified 215 diameters. For measuring the size of objects in the microscope. p 97. x 215

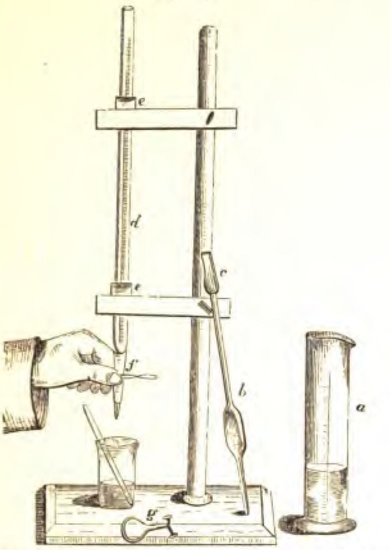
Fig. 26.



Manner of drawing objects from the microscope with the aid of the neutral tint glass reflector. p. 97.

[To face page

Fig. 27.



Burette, holding 50 cubic centimetres, and graduated to half c. c., mounted in its stand and arranged as in making analyses. *a*, glass jar capable of holding 500 c. c. *b*, pipette graduated to hold 20 c. c. *c*, india-rubber tube by which the contents of the pipette are caused to flow as required. *d* is the burette. *e*, small pieces of india-rubber for fixing the burette in its place. *f*, india-rubber tube connecting the extremity of the burette with the spout, and capable of being compressed by the spring, the form of which is represented at *g*. p. 102.

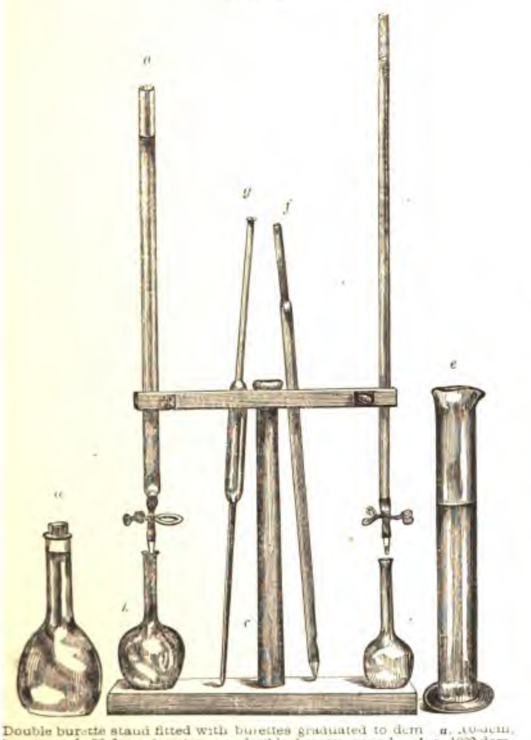
Fig. 28.

Filter useful in volumetric analyses for obtaining a small quantity of clear solution in order to see if all the substance is precipitated. Filtering paper is tied round the lower extremity, *a*. *b* is the spout through which the clear filtrate is poured. p. 102.

Figs. 30, 31.

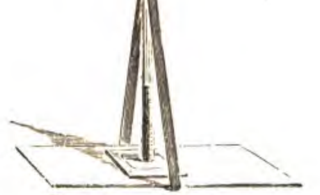
Pipettes of different forms, graduated. p. 102.

Fig. 29.



Double burette stand fitted with burettes graduated to dcm. *a*, 50-dcm. burette. *b*, 30-dcm. burette. *c*, double burette stand. *d*, a 1000-dcm. flask stoppered. *e*, a 1000-dcm. cylinder. *f*, a 50-dcm. whole pipette. *g*, a 10-dcm. *graduated pipette*. *h*, a 500-dcm. flask. *i*, a 200-dcm. flask. *According to Mr. Sutton's directions*. p. 102.

Fig. 32.



Arrangement for collecting the deposit from a very small quantity of fluid. p. 284.

Fig. 33.

Apparatus as arranged by Dr. Handfield Jones for estimating the proportion of urea in urine. p. 114.

[To face page

ILLUSTRATIONS OF URINE.

Fig. 1.

Crystalline residue of healthy urine, obtained by concentrating the liquid over a water bath. *a*, spherical masses consisting of aggregations of crystals of urate of soda. Many of these are seen deposited upon a film consisting of phosphate of lime and ammoniaco-magnesian phosphate. *b*, cubical crystals of chloride of sodium. *c*, octahedral crystals of chloride of sodium, which crystallizes in this form in the presence of urea. *d*, large crystals of common phosphate of soda. *e*, sulphates. *f*, urates. × 40. p. 131.

Fig. 2.

Crystals of inorganic salts of healthy urine, obtained by incinerating the dry residue, decarbonizing it, and extracting it with water. The solution being concentrated to the proper degree, readily crystallizes. *a*, crystals of common salt, obtained by evaporating the solution nearly to dryness. *b*, crystals of common salt formed in a concentrated solution. *c*, crosslets of common salt obtained by evaporating the solution very rapidly to dryness. *d*, crystals of phosphate of soda. *e*, crystals of sulphates. p. 156. × 130.

[To face page 130.

PLATE I A.

ILLUSTRATIONS OF URINE.

Fig. 3.

Chloride of ammonium. × 215. p. 130.

Fig. 4.

Crystals of uric acid. × 215. p. 139.

Fig. 5.

Oxalate of urea, obtained by adding oxalic acid to concentrated urine. × 215. p. 132.

Fig. 6.

Crystals of indigo, *a* and *b*, obtained by sublimation, *c*, small crystals in fluid. p. 148.

Fig. 7.

Nitrate of urea. *a*, crystals obtained from urine; *b*, crystals of pure nitrate of urea. × 215. p. 132.

Fig. 8.

Crystals of uroglaucine from the urine. *a*, small masses of a blue colour; *b*, composed of small spherical particles; *c*, crystals of uroglaucine of a deep purple or violet colour. × 403. p. 148.

Fig. 9.

Urea obtained from urine. × 215. p. [illegible].

Fig. 10.

Crystals of hippuric acid. Robin and Verdeil. p. 11[illegible].

[To follow Plate I.]

[*To face Page* 132.

URINE-II

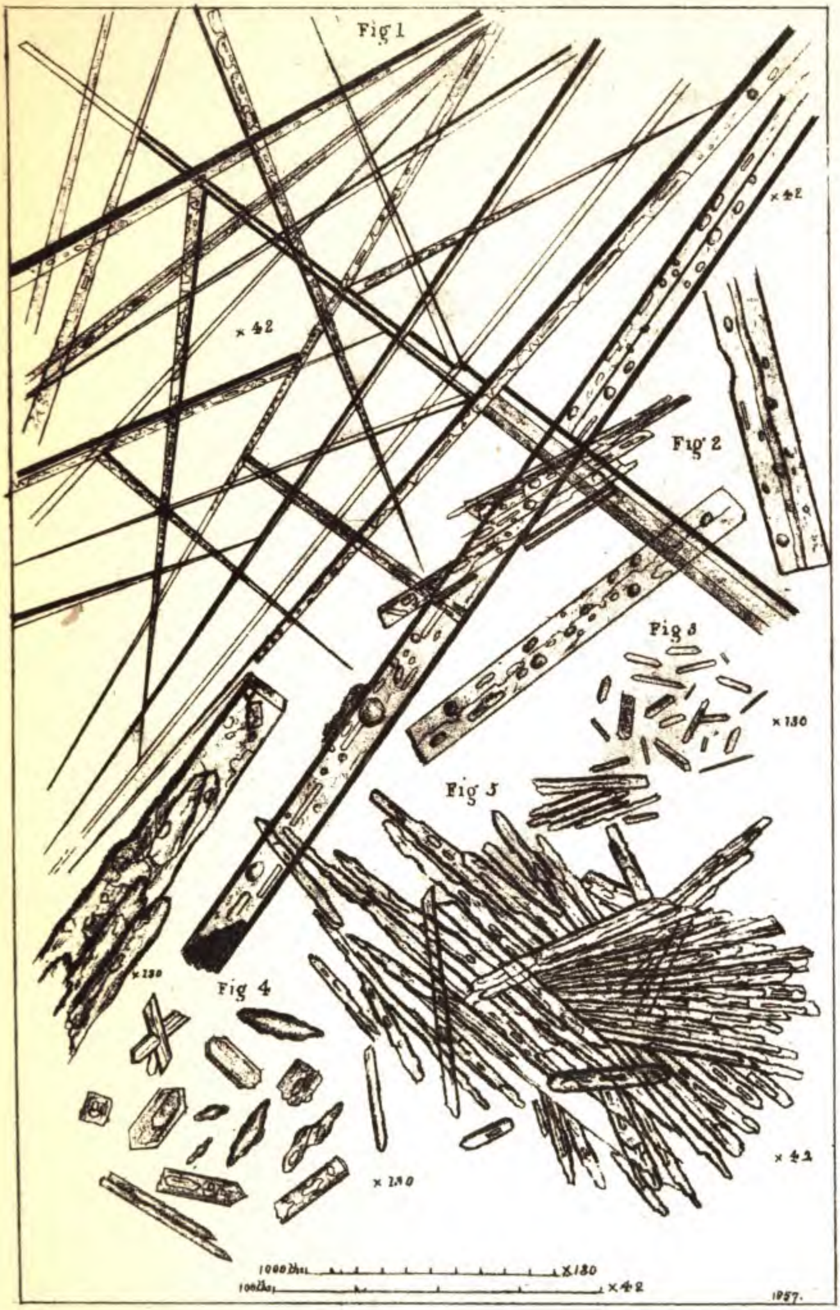
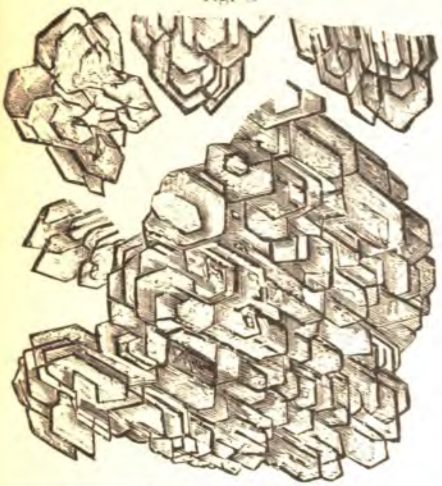


Fig 1
× 42
× 42
Fig 2
Fig 3
× 130
Fig 5
× 130
Fig 4
× 130
× 42
1000ths
100ths
× 130
× 42
1957.

Fig. 1.

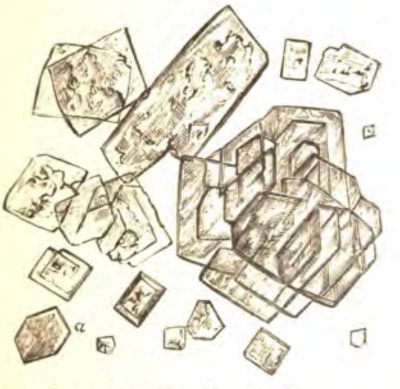


Crystals of nitrate of urea ($C_2H_4N_2O_2$. HO, NO_5) formed by adding excess of nitric acid to concentrated urine × 130. p. 132.

Fig. 2.

Nitrate of urea formed by adding a quantity of nitric acid not sufficient to combine with the whole of the urea present. × 130. p. 132.

Fig. 3.



Nitrate of urea, obtained by adding a moderate quantity of nitric acid to slightly concentrated urine in a test tube, and allowing it to crystallize slowly. × 130.

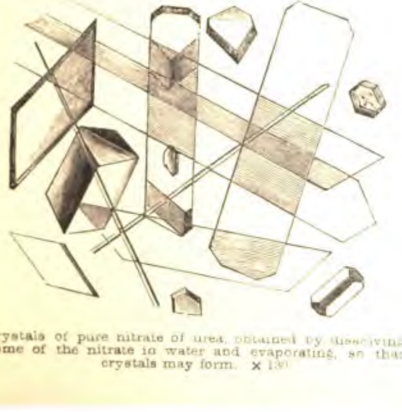
Fig. 4.

Nitrate of urea, obtained by adding a marked excess of nitric acid. × 130.

Fig. 5.

Nitrate of urea formed by adding only two drops of nitric acid to highly concentrated urine. × 130.

Fig. 6.



Crystals of pure nitrate of urea, obtained by dissolving some of the nitrate in water and evaporating, so that crystals may form. × 130.

[To face page 134.

Plate IV.

Oxalate of Urea, $C_2H_4N_2O_2$, HO, C_2O_3.

Fig. 1. Crystals of oxalate of urea, obtained by re-crystallizing nearly pure oxalate of urea from an aqueous solution. *a.* Dendritic masses, in which the form of the crystal is not very distinct. *b.* Masses of well formed crystals. *c.* Perfect crystals of oxalate of urea.

Fig. 2. Crystals of oxalate of urea obtained by evaporating healthy urine to dryness, and extracting the residue with alcohol; the alcoholic solution was then evaporated to dryness, and water added until the residue had a syrupy consistence; to this oxalic acid crystals were added in sufficient quantity to form an oxalate with the urea present. *d.* Represents the general character of the crystals of oxalate usually formed in this manner. *e.* More perfect crystals.

ILLUSTRATIONS OF URINE.

Fig. 3.

Chloride of ammonium, × 215. p. 130.

Fig. 4.

Crystals of uric acid. × 215. p. 130.

Fig. 5.

Oxalate of urea, obtained by adding oxalic acid to concentrated urine. × 215. p. 132.

Fig. 6.

Crystals of indigo, *a* and *b*, obtained by sublimation. *c*. small crystals in fluid. p. 148.

Fig. 7.

Nitrate of urea. *a*. crystals obtained from urine; *b*, crystals of pure nitrate of urea. × 215. p. 132.

Fig. 8.

Crystals of uroglaucine from the urine. *a*, small masses of a blue colour; *b*, composed of small spherical particles; *c*, crystals of uroglaucine of a deep purple or violet colour. × 403. p. 148.

Fig. 9.

Urea obtained from urine. × 215. p. 133.

Fig. 10.

Crystals of hippuric acid. Robin and Verdeil. p. 112.

[redacted]

Plate II.

Urea, $C_2H_4N_2O_2$.

Fig. 1. Urea obtained from urine crystallized in its own mother liquor.

Fig. 2. The same examined in the dry way.

Fig. 3. Small crystals of urea formed in a concentrated solution of natural urea.

Fig. 4. Similar crystals of larger size.

Fig. 5. Artificial urea crystallized. Examined in the dry way.

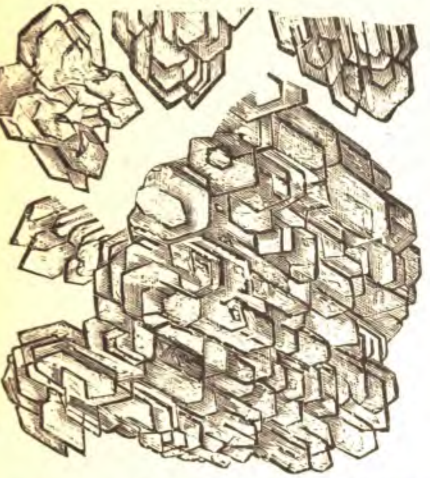
Urea.

Pure urea may be easily obtained by the decomposition of the nitrate or oxalate of urea. The crystals represented in fig. 1 were made by decomposing pure oxalate of urea with common chalk. An oxalate of lime is formed, which is separated by filtration, and the urea remains in solution. From the nitrate, urea may be obtained by adding carbonate of baryta — nitrate of baryta and urea result; the latter may be separated by evaporation to dryness, and extraction with alcohol, which dissolves the urea and leaves the nitrate of baryta.

For the mode of preparing the nitrate and oxalate of urea, see page 132. Pure urea may also be obtained artificially by evaporating cyanate of ammonia to dryness.

ILLUSTRATIONS OF URINE.

Fig. 1.

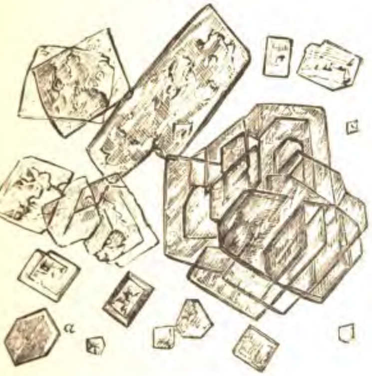


Crystals of nitrate of urea ($C_2H_4N_2O_2$, HO, NO_5) formed by adding excess of nitric acid to concentrated urine. × 130. p. 132.

Fig. 2.

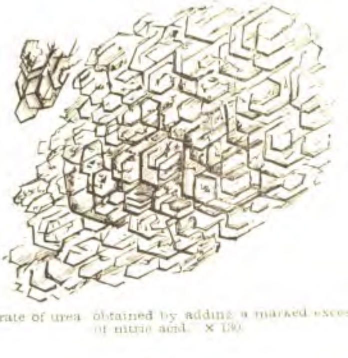
Nitrate of urea formed by adding a quantity of nitric acid not sufficient to combine with the whole of the urea present. × 130. p. 132.

Fig. 3.



Nitrate of urea, obtained by adding a moderate quantity of nitric acid to slightly concentrated urine in a test tube, and allowing it to crystallize slowly. × 130.

Fig. 4.

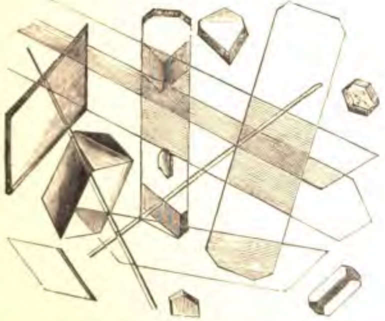


Nitrate of urea obtained by adding a marked excess of nitric acid. × 130.

Fig. 5.

Nitrate of urea formed by adding only two drops of nitric acid to highly concentrated urine. × 130.

Fig. 6.

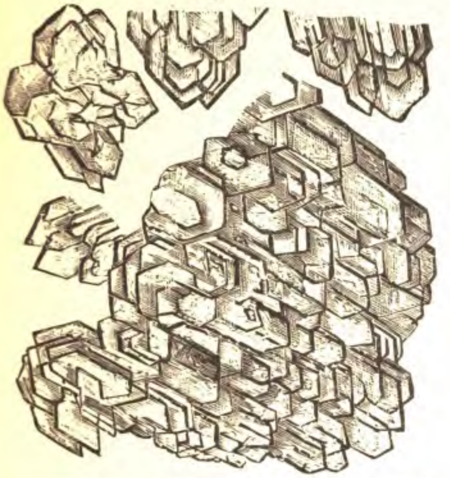


Crystals of pure nitrate of urea, obtained by dissolving some of the nitrate in water and evaporating, so that crystals *may form*. × 130.

[To face page 13

ILLUSTRATIONS OF URINE.

Fig. 1.



Crystals of nitrate of urea ($C_2H_4N_2O_2$, HO, NO_5) formed by adding excess of nitric acid to concentrated urine. × 130. p 132.

Fig. 2.

Nitrate of urea formed by adding a quantity of nitric acid not sufficient to combine with the whole of the urea present. × 130. p 132.

Fig. 3.

Nitrate of urea, obtained by adding a moderate quantity of nitric acid to slightly concentrated urine in a test tube, and allowing it to crystallize slowly. × 130.

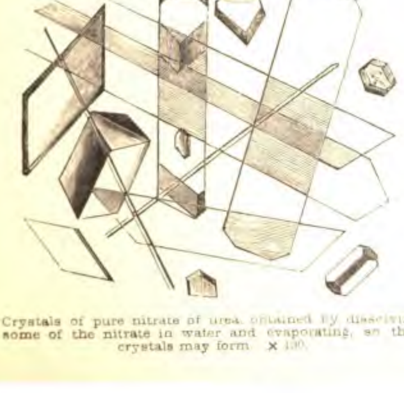
Fig. 4.

Nitrate of urea, obtained by adding a marked excess of nitric acid. × 130.

Fig. 5.

Nitrate of urea formed by adding only two drops of nitric acid to highly concentrated urine. × 130.

Fig. 6.

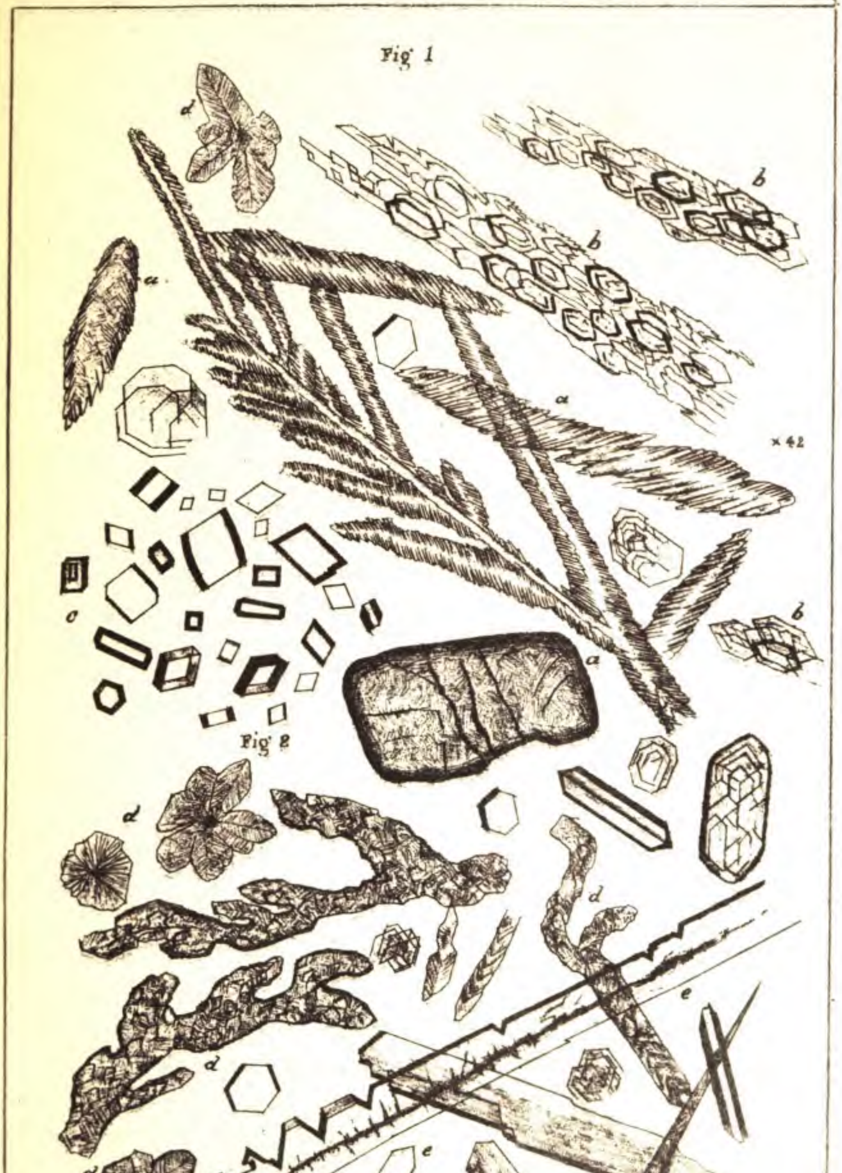


Crystals of pure nitrate of urea, obtained by dissolving some of the nitrate in water and evaporating, so that crystals may form. × 130.

[To face page 13

[*To face Page* 136.

URINE - IV.

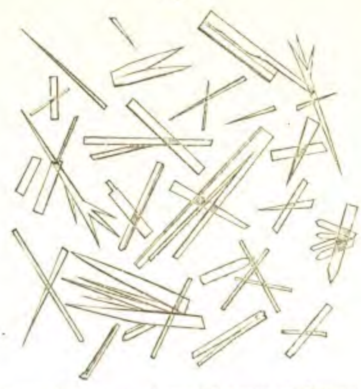


ILLUSTRATIONS OF URINE.

Fig. 1.

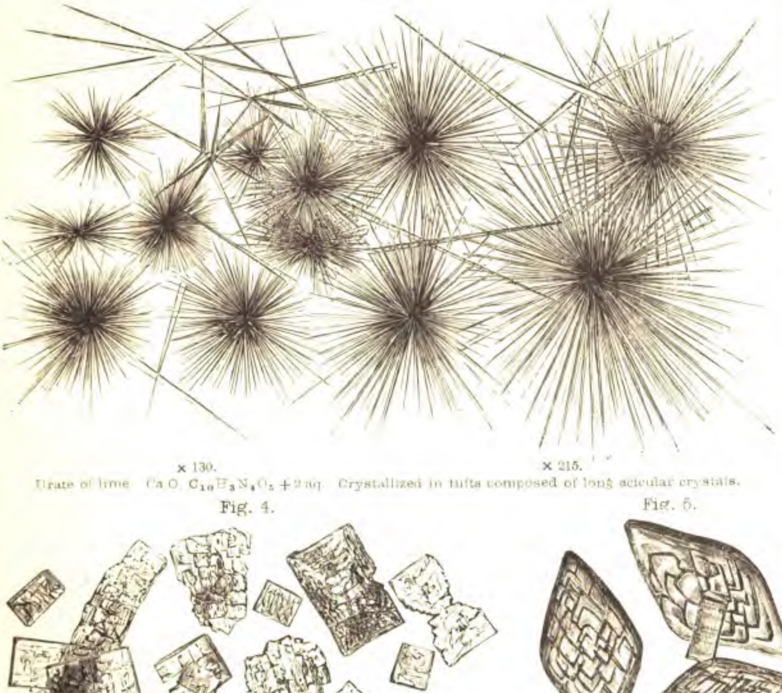
Urate of magnesia. $MgO, C_{10}H_3N_4O_5 + 6$ aq. Crystallized in tufts. × 130.

Fig. 2.



Urate of magnesia, showing the separate forms of the crystals. × 215.

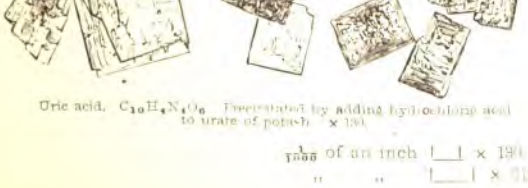
Fig. 3.



× 130. × 215.

Urate of lime. $CaO, C_{10}H_3N_4O_5 + 2$ aq. Crystallized in tufts composed of long acicular crystals.

Fig. 4.



Uric acid. $C_{10}H_4N_4O_6$. Precipitated by adding hydrochloric acid to urate of potash. × 130.

Fig. 5.

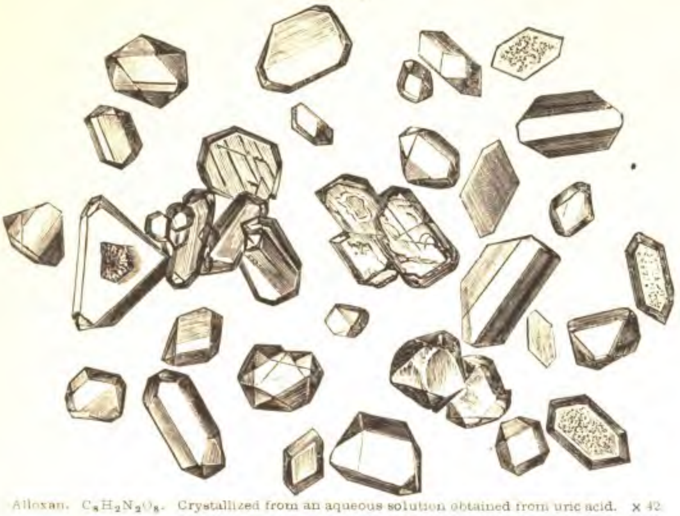
Uric acid deposited from urine. × 130.

$\frac{1}{1000}$ of an inch |__| × 130.

" " |___| × 215.

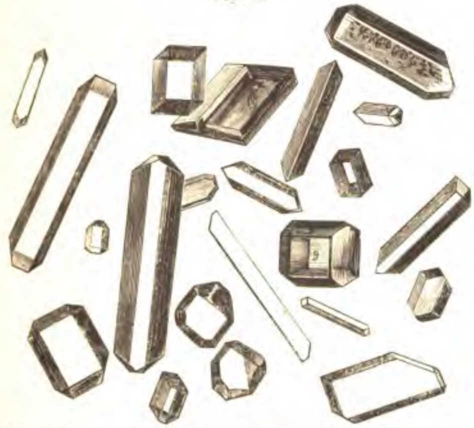
[To face page 82.

Fig. 1.



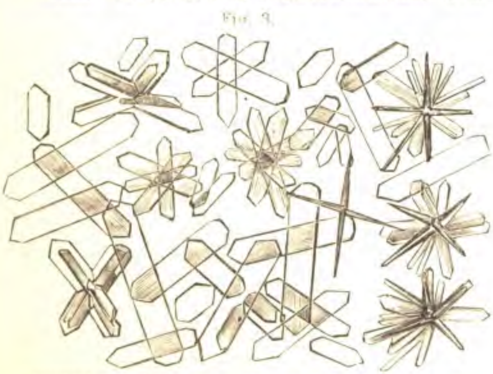
Alloxan. $C_8H_2N_2O_8$. Crystallized from an aqueous solution obtained from uric acid. × 42.

Fig. 2.



Alloxantin. $C_{16}H_4N_4O_{14}+6$ aq. Prepared from uric acid. × 130.

Fig. 3.



Parabanic acid. $C_6H_2N_2O_6$. Obtained from uric acid. × 130.

Fig. 4.

Crystals of creatine. p. 138.

Fig. 5.

Crystals of inosite. p. 280.

Fig. 6.

Lactate of copper. p. 153.

[To face page 140.

ILLUSTRATIONS OF URINE.

Fig. 1.

Compound of chloride of zinc and creatinine, as it is obtained from urine. ($C_8H_7N_3O_2$. Zn Cl.) × 29.

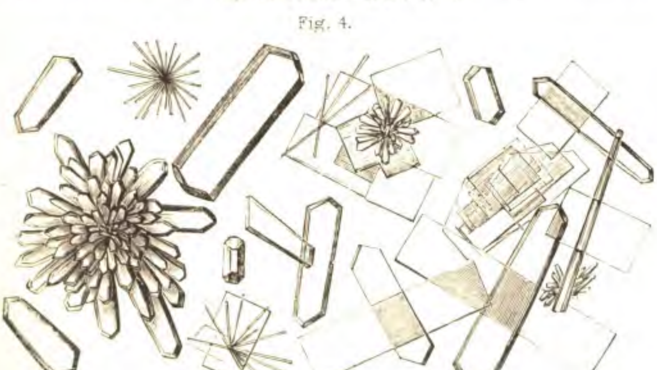
Fig. 2.

Compound of chloride of zinc and creatinine after re-crystallization in water. × 215. p. 137.

Fig. 3.

Crystals of creatine obtained from the chloride of zinc compound. Crystallized from an aqueous solution. × 130. p. 138

Fig. 4.



Crystals of creatinine obtained from the chloride of zinc compound × 130. p. 137.

$\frac{1}{1000}$ of an inch |__| × 130.
" " |___| × 215.

[To face page 138.

ILLUSTRATIONS OF URINE.

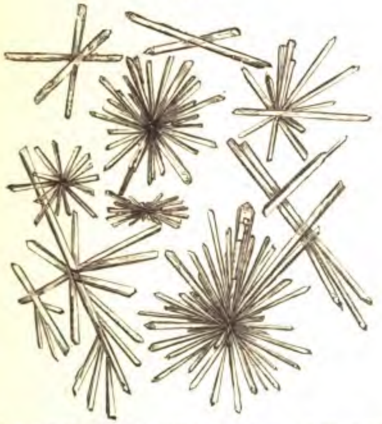
Fig. 1.

Alloxanic acid. $C_8H_4N_2O_{10}$. × 130.

Fig. 2.

Oxaluric acid. $C_6H_4N_2O_8$. × 215

Fig. 3.

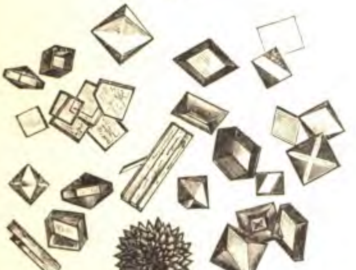


Oxalurate of ammonia. $NH_3, C_6H_4N_2O_8$. × 42. p. 153.

Fig. 4.

Oxalurate of lime. $CaO, C_6H_3N_2O_7 + aq$. × 42

Fig. 6



Oxalurate of magnesia. $MgO, C_6H_3N_2O_7 + aq$. × 215.

Fig. 5.

Uramile. $C_8H_5N_3O_6$. × 130.

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L

Plate IX.

Fig. 1. Alloxanic acid, $C_8H_4N_2O_{10}$.

Fig. 2. Oxaluric acid, $C_6H_4N_2O_8$.

Fig. 3. Oxalurate of ammonia, NH_3, $C_6H_4N_2O_8$.

Fig. 4. Murexide, $C_{16}H_8N_6O_{12}$.

Fig. 5. Thionuric acid, $C_8H_5N_3O_8 + 2SO_2$.

Fig. 6. Thionurate of ammonia, $2NH_3$, $C_8H_5N_3O_8$, $2SO_2 + 2$ aq.

The alloxanic acid was prepared by adding baryta water to a solution of alloxan. The alloxanate of baryta so formed was decomposed by sulphuric acid, and the clear solution filtered from the precipitate of sulphate of baryta was evaporated and crystallized.

Oxaluric acid was obtained by treating a solution of oxalurate of ammonia with hydrochloric acid. The oxaluric acid was precipitated.

Oxalurate of ammonia was prepared by dissolving parabanic acid in ammonia. Upon heating the solution to the boiling point oxalurate of ammonia was formed, and crystals were obtained upon evaporation.

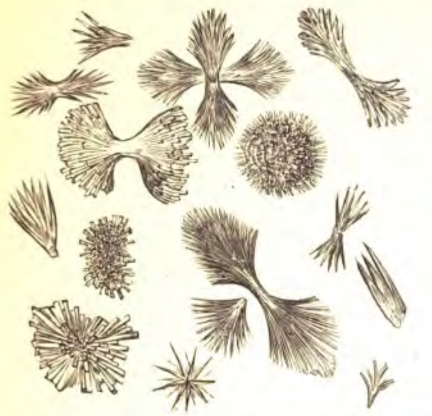
Murexid. Carbonate of ammonia was added to a warm solution ot alloxan and alloxantin. The murexid separated in its characteristic dark red crystals as the solution cooled.

Thionuric acid. A solution of thionurate of ammonia in hot water, was precipitated by acetate of lead. The precipitate was suspended in water and decomposed by sulphuretted hydrogen. The sulphuret was separated by filtration, and the clear solution yielded crystals on evaporation.

Thionurate of ammonia. A cold strong solution of alloxan was mixed with a solution of sulphurous acid in water until the smell of the latter ceased to disappear after agitation. The fluid was then supersaturated with carbonate of ammonia, and kept boiling for nearly half-an-hour. Upon cooling, the salt crystallized in considerable quantity,

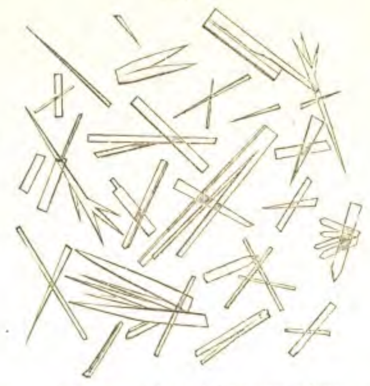
ILLUSTRATIONS OF URINE.

Fig. 1.



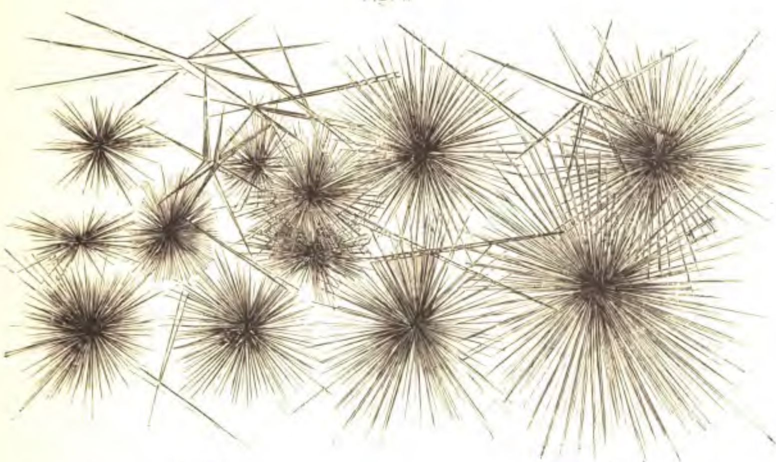
Urate of magnesia. $MgO.C_{10}H_3N_4O_5+6$ aq. Crystallized in tufts. × 130.

Fig. 2.



Urate of magnesia, showing the separate forms of the crystals. × 215.

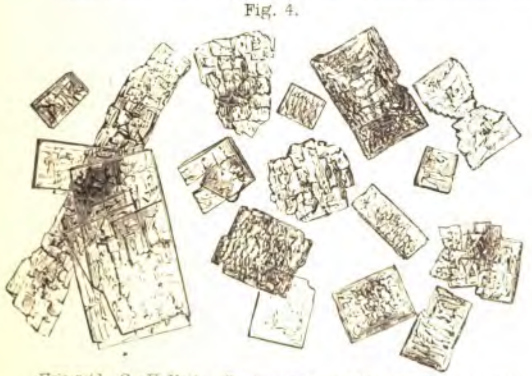
Fig. 3.



× 130. × 215.

Urate of lime. $CaO.C_{10}H_3N_4O_5+2$ aq. Crystallized in tufts composed of long acicular crystals.

Fig. 4.



Uric acid. $C_{10}H_4N_4O_6$. Precipitated by adding hydrochloric acid to urate of potash. × 130.

Fig. 5.

Uric acid deposited from urine. × 130.

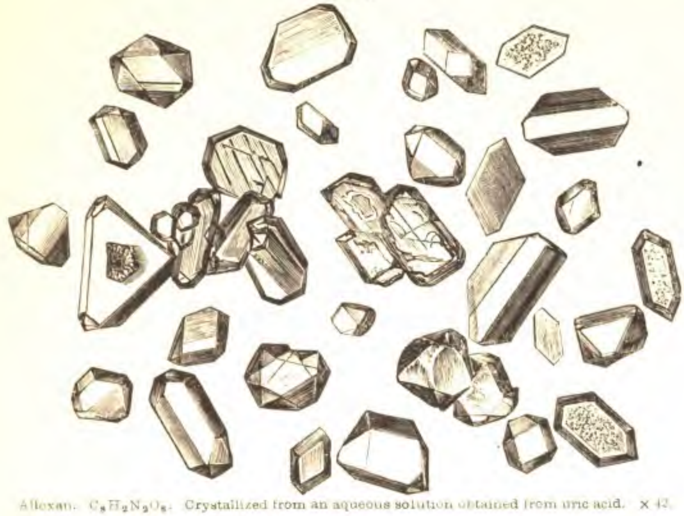
$\frac{1}{1000}$ of an inch |__| × 130.

" " |___| × 215.

[To face page 78.

ILLUSTRATIONS OF URINE.

Fig. 1.

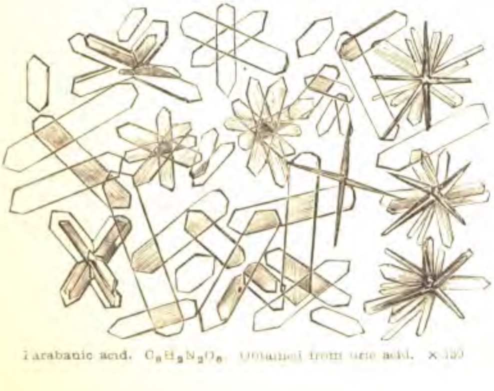


Alloxan. $C_8H_2N_2O_8$. Crystallized from an aqueous solution obtained from uric acid. × 42.

Fig. 2.

Alloxantin. $C_{16}H_4N_4O_{14}+6$ aq. Prepared from uric acid. × 130.

Fig. 3.



Parabanic acid. $C_6H_2N_2O_6$. Obtained from uric acid. × 100.

Fig. 4.

Crystals of creatine. p. 138.

Fig. 5.

Crystals of inosite. p. 280.

Fig. 6.

Lactate of copper. p. 153.

[To face page 140.

ILLUSTRATIONS OF URINE.

Fig. 1.

Fructification of penicillium glaucum. p 2.3.

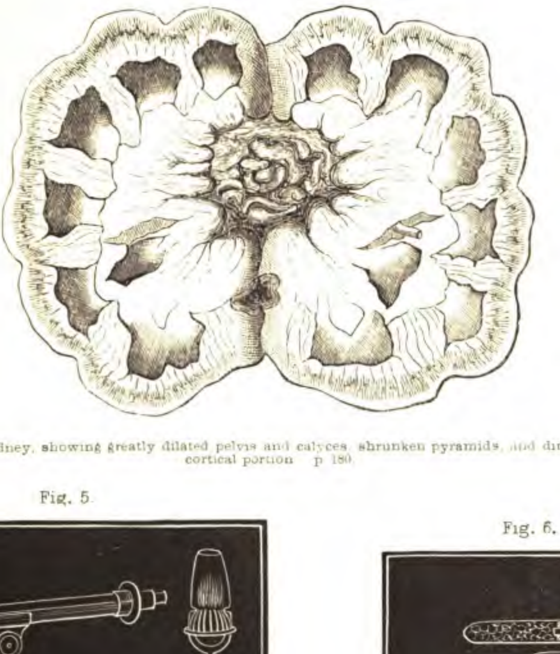
Fig. 2.

The sugar fungus from diabetic urine. p. 240

Fig. 3.

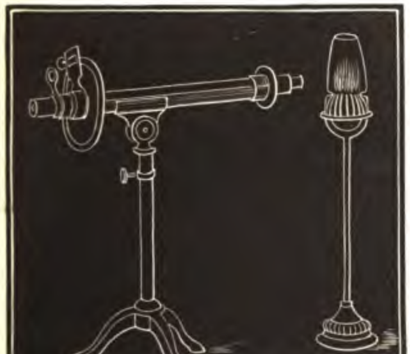
Fructification of yeast fungus. p. 243.

Fig. 4.



Human kidney, showing greatly dilated pelvis and calyces, shrunken pyramids, and diminished cortical portion. p. 180.

Fig. 5.



Modification of Mitscherlich's polarising saccharimeter for determining the proportion of sugar in fluids. p. 252.

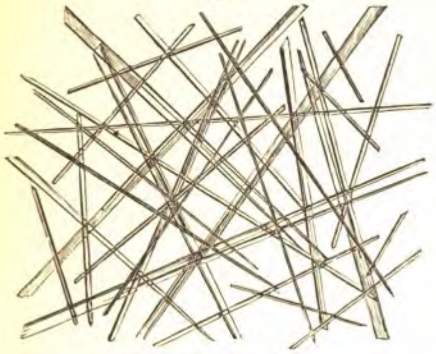
Fig. 6.

Flask adapted for the estimation of carbonic acid gas, used in determining the proportion of sugar in fluids by the fermentation test. p. 252.

[To face page 252.

ILLUSTRATIONS OF URINE.

Fig. 1.

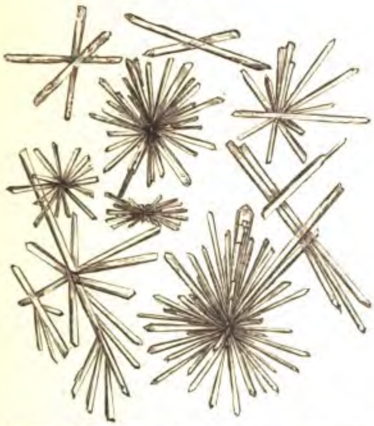


Alloxanic acid. $C_8H_4N_2O_{10}$. × 130.

Fig. 2.

Oxaluric acid. $C_6H_4N_2O_8$. × 215.

Fig. 3.

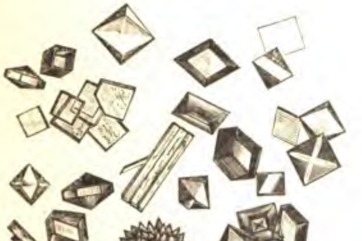


Oxalurate of ammonia. $NH_3, C_6H_4N_2O_8$. × 42. p. 153.

Fig. 4.

Oxalurate of lime. $CaO, C_6H_3N_2O_7 + aq$. × 42.

Fig. 6



Oxalurate of magnesia. $MgO, C_6H_3N_2O_7 + aq$. × 215.

Fig. 5.

Uramile. $C_8H_5N_3O_6$. × 130.

To face page 155.

URINARY DEPOSITS.—EXTRANEOUS MATTERS.

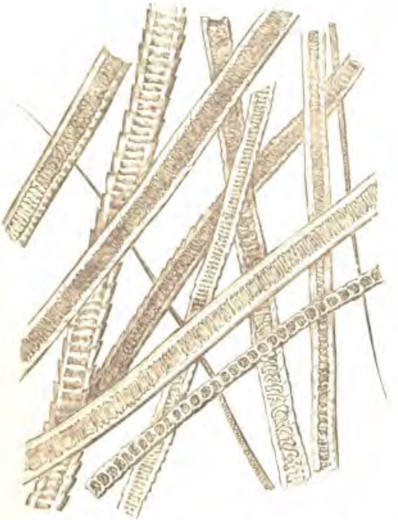
Fig. 1.

Portions of hairs from a blanket. × 130. p. [illegible]

Fig. 2.

Fragments of human hair. In two the central canal occupied with the soft cells of the medulla is represented. × 130. p. [illegible]

Fig. 3.



Fragments of cat's hair. Some of them near the apex and others close to the root of the hair. × 130. p. 294.

Fig. 4.

Fibres of silk. a, white silk; b, black silk. × 215. p. [illegible]

Fig. 5.

Scales of moth. × 215. p. [illegible]

1/1000 of an inch ⊔ × 130.

[illegible] × 215.

[To face page [illegible]].

URINARY DEPOSITS.—EXTRANEOUS MATTERS.

Fig. 6.

Cotton fibres. A very small fibre in the upper part of the figure is seen to be twisted round a larger one. × 215. p. 294.

Fig. 7.

Portions of flax fibres. × 215. p. 294.

Fig. 8.

Portions of feathers. The knotted pieces represented are obtained from the lower part of the shaft of the feather. × 215. p. 294.

Fig. 9.

Fibres of deal wood swept from the floor. × 215. p. 295.

Fig. 10.

Elements of dust swept from a shelf. × 215. p. 296.

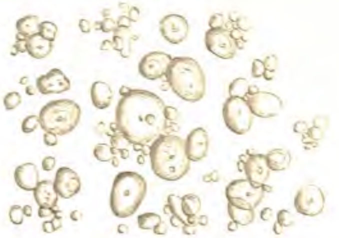
$\frac{1}{1000}$ of an inch ⌴ × 215.

URINARY DEPOSITS.—EXTRANEOUS MATTERS.

Fig. 15.

Potato starch. [illegible] in water. × [illegible]

Fig. 16.

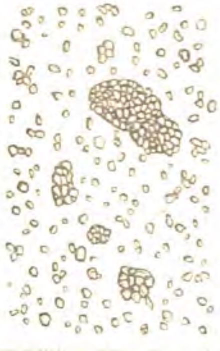


Wheat starch in water. × [illegible]

Fig. 17.

Testa and inner tunics of the wheat grain. × 130. p. [illegible]

Fig. 18.

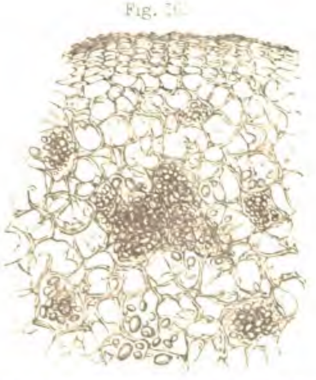


[illegible] starch in water. [illegible]

Fig. 19.

Bread crumbs in water. The starch granules are swollen and softened, but still [illegible] × [illegible] p. [illegible]

Fig. 20.



Cells of tissue of potato in which the starch is contained. A few of the cells are filled with starch granules. × [illegible] p. [illegible]

$\frac{1}{1000}$ of an inch [illegible] × [illegible]

[illegible] × [illegible]

Facing page [illegible]

URINARY DEPOSITS.—EXTRANEOUS MATTERS.

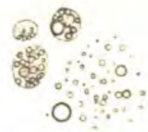
Fig. 17.

A portion of tea leaf. Fragments of spiral vessels are seen projecting from several parts of the margin. × 215. p. [illegible]

Fig. [illegible]

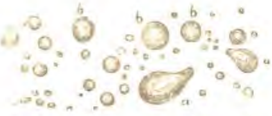
[illegible] bubbles. Appearance in water. × 215.

Fig. [illegible]



Oil globules. Some free and some contained in cells. × 215.

Fig. 19.



Oil globules. Milk. × 215. p. [illegible]

Fig. [illegible]

Globules, consisting of phosphate of lime. Urine. × 215.

Fig. [illegible]

[illegible] frequently met with in urine. × 215.

Fig. [illegible]

Epithelium and fungi from the mouth. × 215. p. [illegible]

Fig. 24.

Portions of partially digested striped muscle. From vomit. × 215. p. [illegible]

$\frac{1}{1000}$ of an inch ⌊___⌋ × 215.

[To face page [illegible]].

URINARY DEPOSITS.

Fig. [illegible]

Urate of soda obtained by concentrating healthy urine × 215 p. [illegible]

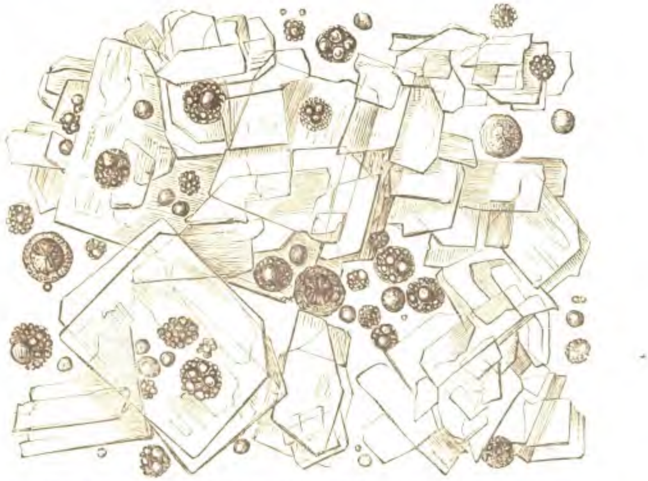
Fig. 26.

Molecular fatty matter of chylous urine. p. 299.

Fig. 27.

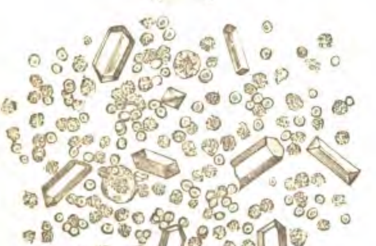
Urate. Ordinary granular deposit, usually termed urate of ammonia. p. 297.

Fig. 28.



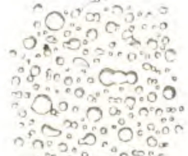
Crystals of cholesterine, obtained from the fatty matter in casts separated from the urine in a case of fatty degeneration of kidneys. × 215. p. 311.

Fig. 29.



Pus and blood corpuscles, with crystals of triple phosphate, from the urine of a man suffering from fungous growths connected with the mucous membrane of the bladder. × 215. p. 318.

Fig. 30.



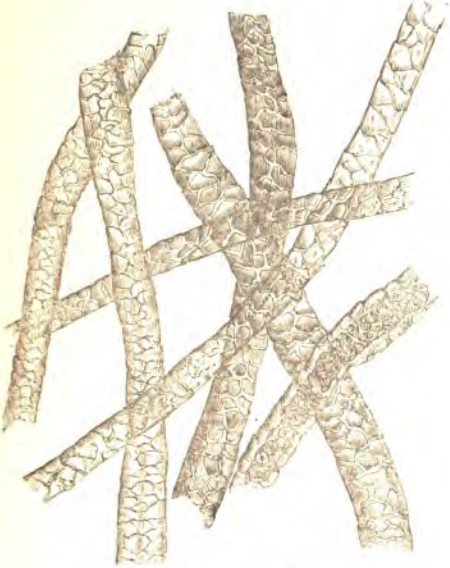
Oil globules of milk. × 215.

$\frac{1}{1000}$ of an inch ⌊___⌋ × 215.

(Opposite page [illegible])

URINARY DEPOSITS.—EXTRANEOUS MATTERS.

Fig. 1.

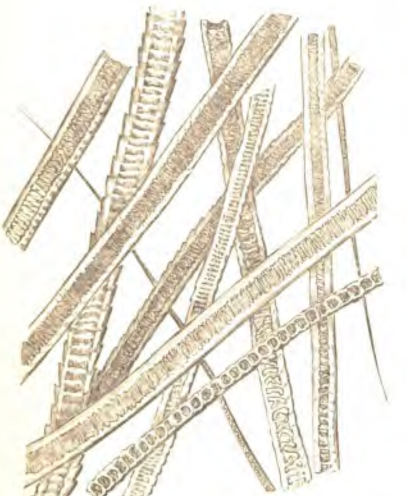


[illegible]ortions of hairs from a blanket. × [illegible] p. [illegible]

Fig. 2.

Fragments of human hair. In one the central canal occupied with the soft cells of the medulla is represented. × 130. p. [illegible]

Fig. 3.



Fragments of cat's hair. Some of them near the apex, and others close to the root of the hair. × 130. p. 294.

Fig. 4.

Fibres of silk: *a*, White silk; *b*, Black silk. × [illegible] p. [illegible]

Fig. 5.

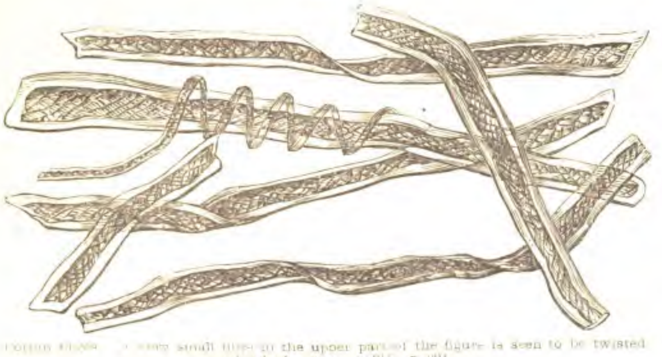
[illegible] of moth. × 215. p. [illegible]

$\frac{1}{1000}$ of an inch × [illegible]

[To face page [illegible]]

URINARY DEPOSITS.—EXTRANEOUS MATTERS.

Fig. 6.



Cotton fibres. A very small fibre in the upper part of the figure is seen to be twisted round a larger one. × 215. p. 291.

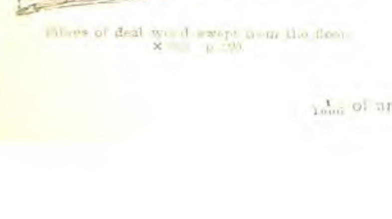
Fig. 7.

Portions of flax fibres. × 215. p. 294.

Fig. 8.

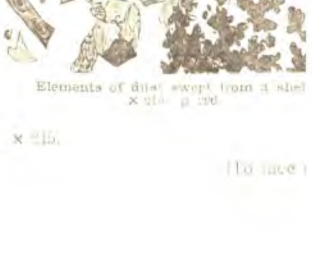
Portions of feathers. The knotted pieces represented are of from the lower part of the shaft of the feather. × 215. p

Fig. 9.



Fibres of deal wood swept from the floor. × [illegible] p. [illegible]

Fig. 10.



Elements of dust swept from a shel × 215. p. [illegible]

$\frac{1}{1000}$ of an inch ⌊___⌋ × 215.

(To face

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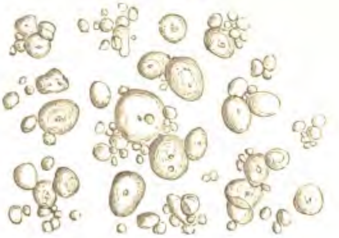
URINARY DEPOSITS.—EXTRANEOUS MATTERS.

Fig. 11.

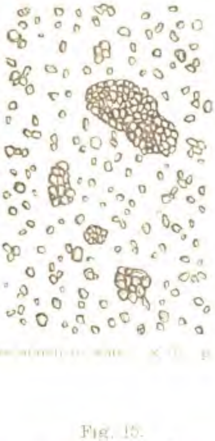
Potato starch. Its appearance in water. × 215. p. 295.

Fig. 12.



Wheat starch in water. × 215. p. 295.

Fig. 13.



Rice starch in water. × [illegible] p. [illegible]

Fig. 14.

Testa and inner tunics of the wheat grain. × 130. p. 295.

Fig. 15.

Bread crumbs in water. The starch granules are swollen and softened, but still preserve their form. × [illegible] p. [illegible]

Fig. 16.

Cells of tissue of potato, in which the starch is contained. A few of the cells are filled with starch granules. × 80. p. 295.

Fig. 17.

A portion of tea-leaf. Fragments of spiral vessels are seen projecting from several parts of the margin. × 215. p. 206.

Fig. 18.

Air bubbles. Appearance in water. × 215.

Fig. 20.

Oil globules. Some free and some contained in cells. × 215.

Fig. 19.

Oil globules. Milk. × 215. p. 206.

Fig. 21.

Globules, consisting of phosphate of lime. Urine. × 215.

Fig. 22.

[illegible] × 215.

Fig. 23.

Epithelium and fungi from the mouth. × 215. p. 207.

Fig. 24.

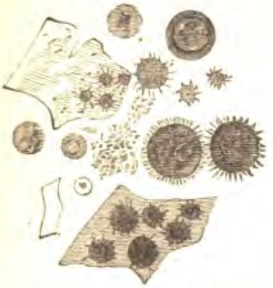
Portions of partially digested striped muscle. From vomit. × 215. p. 207.

$\frac{1}{1000}$ of an inch ⌊___⌋ × 215.

[To face page 206.

URINARY DEPOSITS.

Fig. 25.



Urate of soda obtained by concentrating healthy urine. × [illegible] p. [illegible]

Fig. 26.

Molecular fatty matter of chylous urine. p. [illegible]

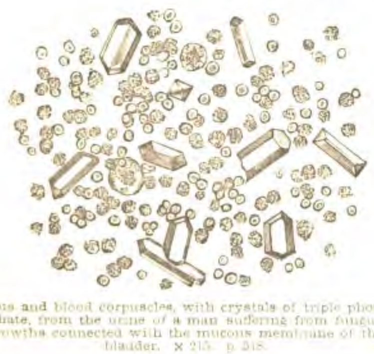
Fig. 27.

Urate. Ordinary granular deposit, usually termed urate of ammonia. p. 297.

Fig. 28.

Crystals of cholesterine, obtained from the fatty matter in casts separated from the urine of a case of fatty degeneration of kidneys. × 215. p. 311.

Fig. 29.

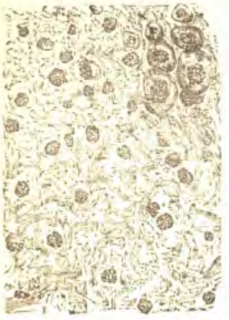


Pus and blood corpuscles, with crystals of triple phosphate, from the urine of a man suffering from fungus growths connected with the mucous membrane of the bladder. × 215. p. 318.

Fig. 30.

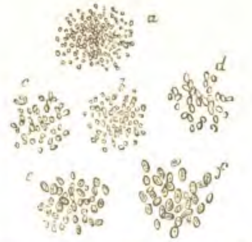
Oil globules of milk. × [illegible]

Fig. 31.



[illegible] and mucus corpuscles [illegible] Urine. In the upper part of the fig. to the right several cells of bladder epithelium are represented. × 215. p. 318.

Fig. 32.



Penicillium glaucum, developed in acid urine. *a*, within twelve hours after the urine was passed; *b*, one day after; *c*, two days after; *d*, four days after; *e*, five days after; *f*, after standing six days. p. 322.

Fig. 33.

Algæ and vibriones from urine three days after it was passed. × 403.

Fig. 34.

Vegetable organisms met with in urine. *a*, different forms of fungi; *b*, vibriones. × 215.

Fig. 35.

[illegible] in undisturbed diabetic [illegible] × [illegible]

Fig. 36.

Bacteria germs in the epithelial cells of the mouth. × 3000.

Fig. 37.

The same × 1500.

Fig. 38.

The same × 3000.

Fig. 39.

[illegible]icillium glaucum, found in diabetic urine four days after it was passed. × 215.

Fig. 40.

[illegible]m glaucum from acid urine.

Fig. 41.

Penicillium glaucum × 215.

Fig. 42.

[illegible]icillium glaucum, from acid urine. × 215.

Fig. 43.

The sugar fungus from diabetic urine. p. 3[illegible]

Fig. 44.

Yeast added to diabetic urine, and allowed to stand in a warm place forty-eight hours. Showing growth of the torula. p. 3[illegible]. *a* × 215. *b* × [illegible]

$\frac{1}{1000}$ of an inch ⊢⊣ × 215.
" " ⊢——⊣ × [illegible]
" " ⊢——————————⊣ × 1800.

[To face page [illegible].

Fig. 45.

[illegible] of yeast fungus. p. [illegible]

Fig. 46.

Fungi formed in acid urine. Several spermatozoa are seen amongst the fungous filaments. × 700.

Fig. 47.

[illegible] of penicillium [illegible] p. 323.

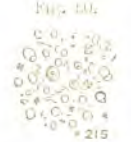
Fig. 48.

[illegible] The oval spores [illegible] Developed in [illegible] which was present. × 400. [illegible]

Fig. [illegible]

Fungi formed in acid urine. [illegible] Same specimen as Fig. [illegible] × [illegible]

Fig. 50.



Sporules of fungi resembling blood corpuscles. [illegible]

Fig. [illegible]

[illegible] fungi formed [illegible] [illegible] much [illegible] × [illegible]

Fig. 12.

Penicillium glaucum, from vomit. × 700.

Fig. [illegible]

Sarcinae ventriculi, ordinary size, from vomit. *a* sarcinae. *b* starch granules partially dissolved and rendered transparent. *c*, minute oval fungi usually present in vomit containing sarcinae. *d* vibriones. *e*, oil globules. *f*, starch globule from bread, cracked but not yet softened. × 215.

Fig. [illegible]

× 700. × [illegible]

[illegible] from [illegible] vol. [illegible] p. 3[illegible].

$\frac{1}{1000}$ of an inch [illegible] × 215.

[illegible] × 700.

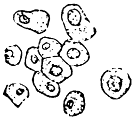
[illegible] To face [illegible]

URINARY DEPOSITS.—EPITHELIUM.

Fig. 55.

Epithelium from the convoluted portion of the uriniferous tube. *a* treated with acetic acid. × 215.

Fig. 56.



Epithelium from the pelvis of the human kidney. × 215.

Fig. 57.

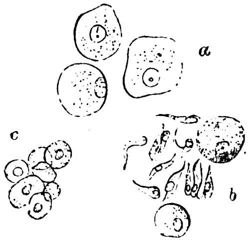
Epithelium from the ureter. × 215.

Fig. 58.

Epithelium from the urethra. × 215.

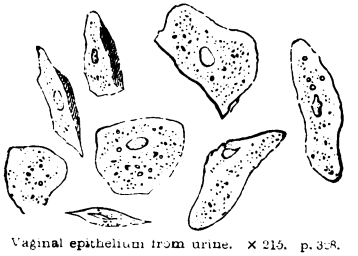
p. 327.

Fig. 59.



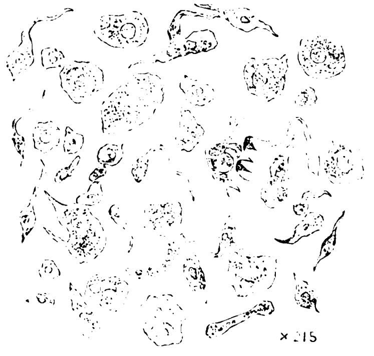
Bladder epithelium. *a*. from the general surface. *b*. from the fundus. *c*. scaly epithelium from the bladder. × 215. p. 327

Fig. 60.



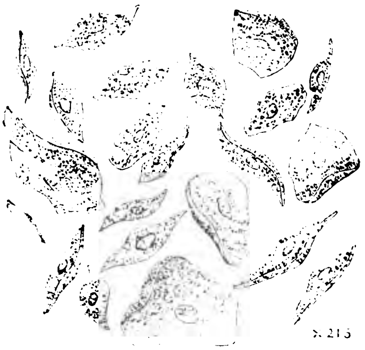
Vaginal epithelium from urine. × 215. p. 328.

Fig. 61.



Epithelium from the bladder, showing the hollows in some of the large cells into which the subjacent columnar cells fit. p. 327

Fig. 62.

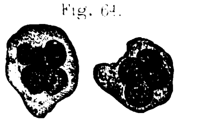


Epithelium from the vagina. p. 328.

Fig. 63.

Large epithelial cell from the bladder, undergoing division. × 700. p. 327.

Fig. 64.



Formation of pus from germinal matter of epithelial cells. × 215. p. 328

$\frac{1}{1000}$ of an inch ... × 215.

" " ... × 700.

[To face page 328.

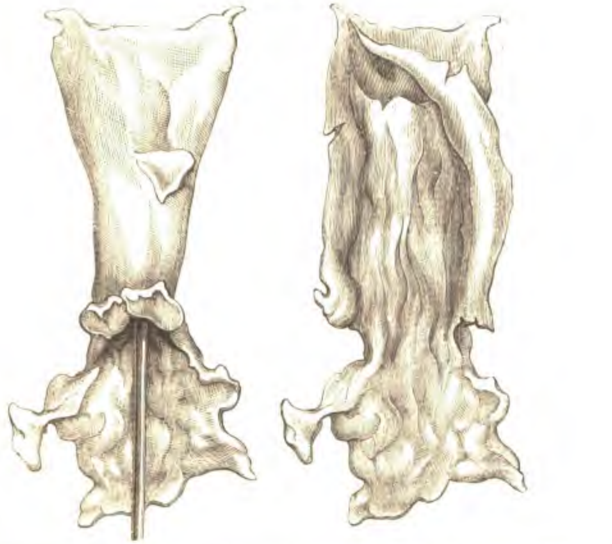
Fig. 65.

Membranous substance passed with a blood clot during the menstrual period, probably from the vagina. From a preparation of Dr. Tilt's.

Fig. 66. Fig. 67.

Two fragments of a uterine cast passed by a lady, age 25. These are composed entirely of epithelium.

Fig. 68.



Cast of the womb and vagina (the mucous covering belonging to the former cavity being inverted). From a drawing by Dr Vannoni, of Florence.

(To follow PLATE VIII

URINARY DEPOSITS.

Fig. 25.

Urate of soda obtained by concentrating healthy urine × 215. p. 297.

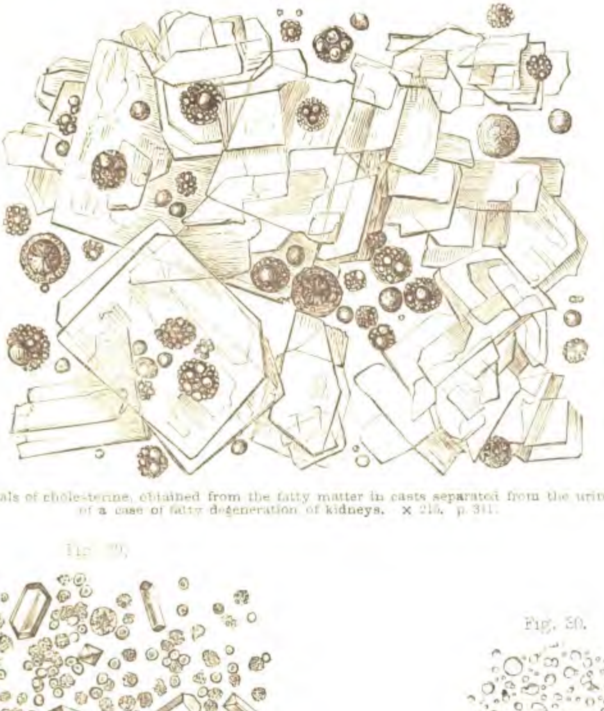
Fig. 26.

Molecular fatty matter of chylous urine. p. 299.

Fig. 27.

Urate. Ordinary granular deposit, usually termed urate of ammonia. p. 297.

Fig. 28.



Crystals of cholesterine, obtained from the fatty matter in casts separated from the urine of a case of fatty degeneration of kidneys. × 215. p. 311.

Fig. 29.

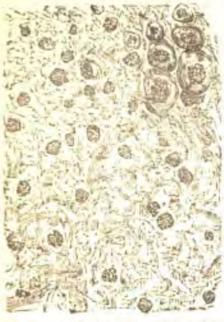
Pus and blood corpuscles, with crystals of triple phosphate, from the urine of a man suffering from fungus growths connected with the mucous membrane of the bladder. × 215. p. 318.

Fig. 30.

Oil globules of milk. × 215.

$\frac{1}{1000}$ of an inch ⊔ × 215.

Fig. 31.



[illegible] and mucus corpuscles. Urine. In the upper part of the fig. to the right several cells of bladder epithelium are represented. × 215. p. 318.

Fig. 32.

Penicillium glaucum, developed in acid urine. *a*, within twelve hours after the urine was passed; *b*, one day after; *c*, two days after; *d* four days after; *e*, five days after; *f*, after standing six days. p. 322.

Fig. 33.

Algæ and vibriones from urine three days after it was passed. × 400.

Fig. 34.

Vegetable organisms met with in urine. *a*, different forms of fungi; *b*, vibriones. × 215.

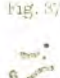
Fig. 35.

[illegible] × 3000.

Fig. 36.

Bacteria germs in old epithelial cells of the mouth. × 3000.

Fig. 37.

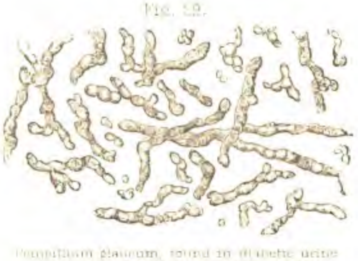


The same. × 1800.

Fig. 38.

The same. × 3000.

Fig. 39.



Penicillium glaucum, found in diabetic urine four days after it was passed. × 215.

Fig. 40.

Penicillium glaucum, [illegible] acid urine.

Fig. 41.

Penicillium glaucum × 215.

Fig. 42.

Penicillium glaucum, from acid urine. × 215.

Fig. 43.

The sugar fungus from diabetic urine. p. [illegible]

Fig. 44.

Yeast added to diabetic urine, and allowed to stand in a warm place forty-eight hours. Showing growth of the torula. p. 3[illegible]. *a* × 215 *b* × 400.

$\frac{1}{1000}$ of an inch |—| × 215.

„ „ |——| × [illegible]

„ „ |————————————| × 1800.

[To face page 3

Fig. 45.

Fructification of yeast fungus. p. [illegible]

Fig. 46.

Fungi formed in acid urine. Several spermatozoa are seen amongst the fungous filaments. × 700.

Fig. 47.

Fructification of penicillium glaucum. p. 323.

Fig. 42.

[illegible] The oval spores [illegible] Developed in urine [illegible] × 400. p. [illegible]

Fig. 41.

Fungi formed in acid urine. [illegible] same specimen as Fig. 46. × [illegible]

Fig. 50.

Sporules of fungi resembling blood corpuscles. × 215.

Fig. 51.

Common fungi formed in the urine of a [illegible] [illegible] much oxalate of lime. × [illegible]

Fig. [illegible]

Penicillium glaucum. [illegible] × 700.

Fig. [illegible]

Sarcinæ ventriculi, ordinary size, from vomit. *a*, sarcinæ. *b*, starch granules partially dissolved and rendered transparent. *c*, minute oval fungi usually present in vomit containing sarcinæ. *d*, vibriones. *e*, oil globules. *f*, starch globule from bread, cracked but not as yet softened. × 215.

$\frac{1}{1000}$ of an inch ____ × 215.

[illegible] ____ × 700.

Fig. [illegible]

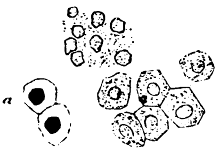
× 700. × 1800.

Sarcinæ [illegible] × [illegible] p. [illegible]

(To face [illegible])

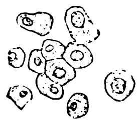
URINARY DEPOSITS.—EPITHELIUM.

Fig. 55.



Epithelium from the convoluted portion of the uriniferous tube. *a*, treated with acetic acid. × 215.

Fig. 56.



Epithelium from the pelvis of the human kidney. × 215.

Fig. 57.

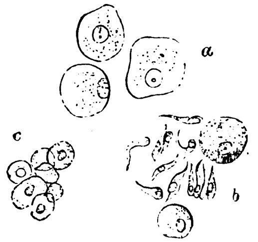
Epithelium from the ureter. × 215.

Fig. 58.

Epithelium from the urethra. × 215.

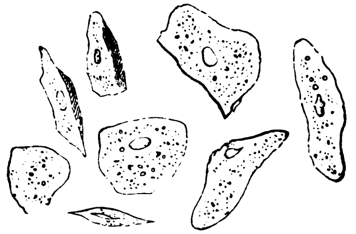
p. 327.

Fig. 59.



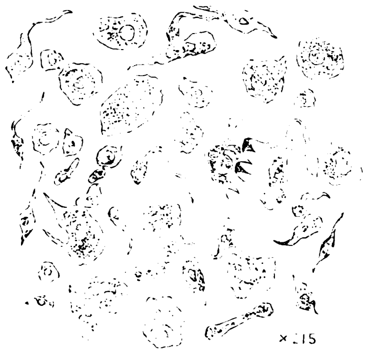
Bladder epithelium. *a*, from the general surface. *b*, from the fundus. *c*, scaly epithelium from the bladder. × 215. p. 327.

Fig. 60.



Vaginal epithelium from urine. × 215. p. 328.

Fig. 61.

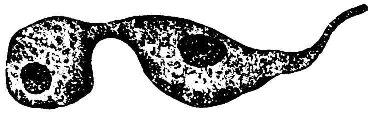


Epithelium from the bladder, showing the hollows in some of the large cells into which the subjacent columnar cells fit. p. 327.

Fig. 62.

Epithelium from the vagina. p. 328.

Fig. 63.



[illegible] epithelium [illegible] bladder, undergoing division. × 700. p. 327.

Fig. 64.

Formation of pus from germinal matter of epithelial cells. × 215. p. 328.

$\frac{1}{1000}$ of an inch [illegible] × 2[illegible].

[illegible] × 7[illegible].

[To face page 328.

Fig. 65.

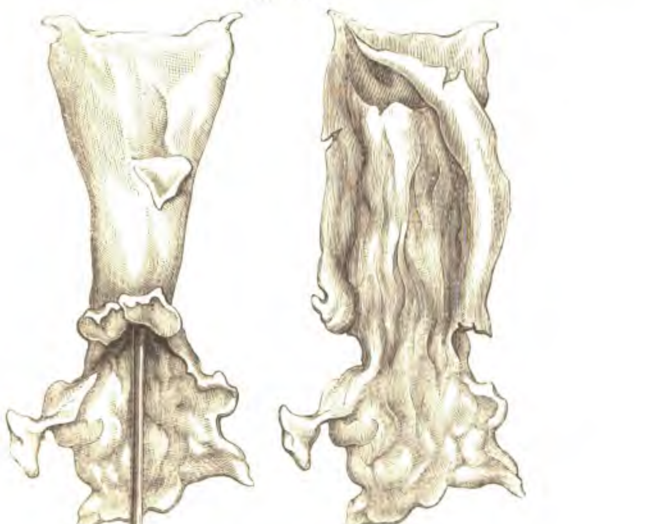
Membranous substance passed with a blood clot during the menstrual period, probably from the vagina. From a preparation of Dr Tilt's.

Fig. 66.

Fig. 67.

Two fragments of a uterine cast passed by a lady, age 25. These are composed entirely of epithelium.

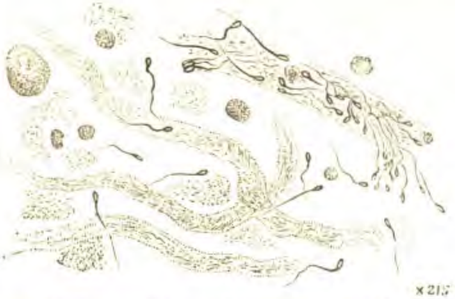
Fig. 68.



Cast of the womb and vagina, the mucous covering belonging to the former cavity. Little inverted. From a drawing by Dr Vannoni, of Florence.

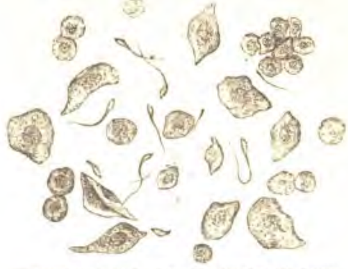
URINARY DEPOSITS.

Fig. 69.



Casts of the seminal tubes. Spermatozoa embedded in them. From an old man upwards of 80 years of age. p. 331.

Fig. 70.



Spermatozoa and cells of vaginal epithelium, removed from the vagina of a little girl a few hours after a rape had been committed. × 215. p. 330.

Fig. 71.

Spermatozoa from urine. × 215. p. 329.

Fig. 72.

Spermatozoa with urate deposited upon them. × 700. p. 329.

Fig. 73.

Long narrow threads of viscid mucus, associated with the presence of spermatozoa in casts of the seminal tubules. From the urine of a case of slight irritability of the neck of the bladder. × 215. p. 331.

Fig. 74.

Filaments of a vegetable nature resembling spermatozoa. × 403. p. 331.

Fig. 75.

a b c d

Body and upper part of the tail of spermatozoon magnified upwards of 3000 diameters.
a, spermatozoon containing much living germinal matter. *b*, the same seen edgeways. *c*, spermatozoon containing comparatively little germinal matter. *d*, spermatozoon crushed, showing separate spherical particles of germinal matter.
p. 329.

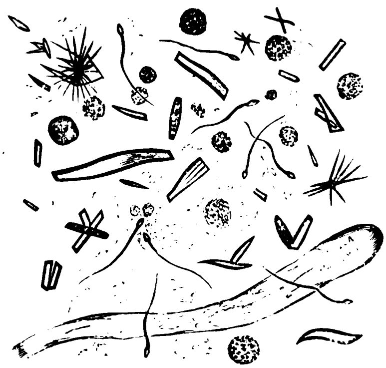
$\frac{1}{1000}$ of an inch ⊢—⊣ × 215.

" " ⊢———⊣

[To face page

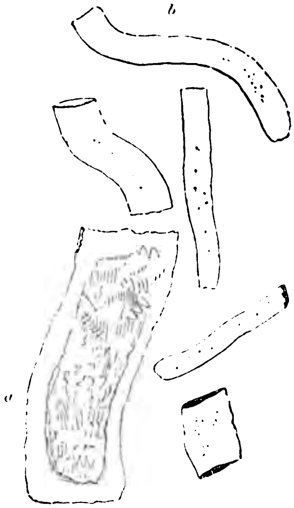
URINARY DEPOSITS

Fig. 76.



Spermatozoa and crystals of phosphate of lime, from the seminal fluid. × 215 p. 359

Fig. 77.



Waxy casts. *a*. of large size. *b* small waxy casts. × 215

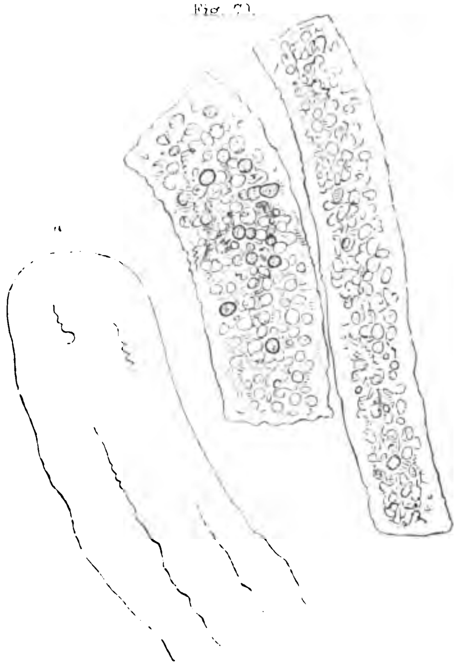
Fig. 78.

Casts containing oil globules, and free fat cells from a case of fatty degeneration of the kidney. × 215

Fig. 75A.

Small granular casts, from the urine of a patient suffering from chronic nephritis. × [illegible]

Fig. 79.



Large casts. Some containing many cells, others consisting of a perfectly transparent wax like material. × [illegible]

Fig. 80.

Epithelial casts. *a*. casts containing cells of epithelium. *b*. cast containing granular matter. From urine of acute dropsy. × [illegible]

[illegible] of an inch [illegible] × [illegible] p. [illegible]

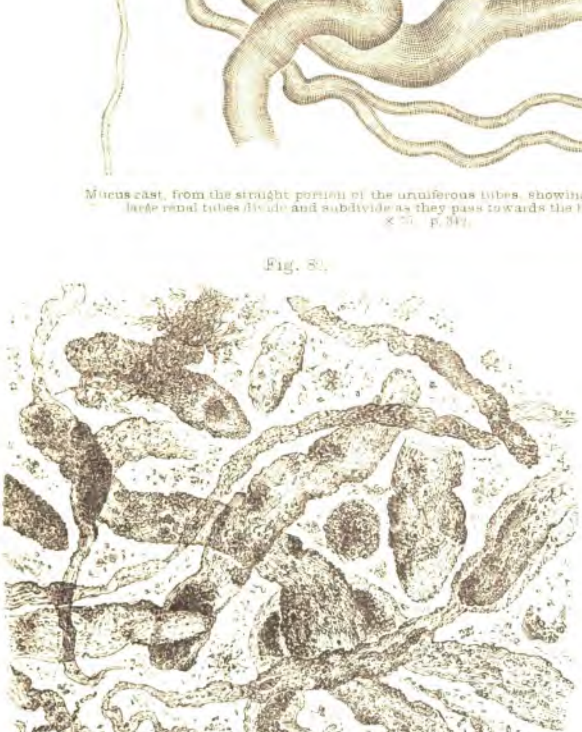
To face page [illegible]

URINARY DEPOSITS.

Fig. 81.

Mucus cast, from the straight portion of the uriniferous tubes, showing the manner in which the large renal tubes divide and subdivide as they pass towards the base of the pyramids. × 75. p. 342.

Fig. 82.



Mucus casts, with dark brown urate deposited upon their surface and in their substance. They became quite clear and transparent when warmed. × 215. p. 342.

Fig. 83.

Waxy casts of large and small diameter. In the centre of the larger ones casts of small diameter are seen to be embedded. × 50. p. 340.

Fig. 84.

Portion of a mucus cast, which has been formed around a smaller and serpentine one. × 215. p. 342.

Fig. 85.

Casts containing blood corpuscles, from a case of acute nephritis. × 215. p. 342.

$\frac{1}{1000}$ of an inch |___| × 215.

[To face page

URINARY DEPOSITS.

FIG. 86.

Epithelial and granular casts from the urine of a woman suffering from acute nephritis with dropsy, of a fortnight's duration. *a*, epithelial casts; the cells of renal epithelium are very distinct, and their nuclei well defined. *b*, casts containing brown granular matter and blood corpuscles. *c*, granular casts of a brown colour, many of them containing a few oil globules. *d*, squamous epithelium from the vagina. *e*, epithelium from the bladder. *f*, cells containing oil globules. *g*, portion of a cast containing oil globules. *h*, circular granular cells, probably altered renal epithelium. *i*, fibre of flax, of accidental presence. *k*, blanket hair. × 215. p. 347.

FIG. 87.

Casts from a case of chronic nephritis. *a*, dark granular casts. *b*, casts containing small granular cells and white blood corpuscles. *c*, waxy casts, consisting of a perfectly clear glistening material. *d*, large cast flattened by pressure, containing white blood corpuscles. *e*, portion of a cast containing a large cell filled with oil globules. *f*, pus corpuscles, probably derived from the bladder. *g*, collections of small oil globules. *h*, large cell containing smaller cells in the interior. Of the nature of this I am ignorant, but I have observed such in several specimens of urine. *i*, portions of cotton fibre. *k*, piece of very thin human hair. *l*, fragment of flax. × 215. p. 347.

$\frac{1}{1000}$ of an inch ⎣__⎦ × 215.

[To face page 346.

URINARY DEPOSITS.

Fig. 88.

Casts, acute inflammation of the kidney.

Casts from the urine of a man aged 45 suffering from acute inflammation of the kidneys. There was very slight oedema of the legs. The patient died comatose three weeks after the first symptoms appeared. The urine contained so much albumen that it became perfectly solid upon the application of heat and after the addition of nitric acid.

a, perfectly transparent wax-like casts. The shading should be more faint than in the drawing. *b*, a very long wax-like cast, consisting of material deposited at two different periods; the original cast in the interior was probably forced a certain distance further down the uriniferous tube, when a new layer of the coagulable material was deposited around it. *c*, casts filled with cells closely resembling pus corpuscles, but somewhat larger. *d*, the same cells free in considerable number; the greater part of the deposit consisted of these cells. *e*, portion of feather. *f*, piece of cotton fibre. *g*, portion of human hair. *h*, flax fibre. × 215. pp. 311, 318.

$\frac{1}{1000}$ of an inch |____| × 215.

[To face page

URINARY DEPOSITS.

Fig. 89.

Casts. Chronic nephritis.

a, casts of large diameter, containing granular matter scattered through them unequally. *b*, a very long, clear and perfectly transparent cast, containing only a few minute oil globules here and there. *c*, dark granular casts, some of them containing a few oil globules. *d*, large masses of granular matter, many of them appearing like granular cells. Most of these are derived from the mucous membrane covering the glans. *e*, cells of renal epithelium, darker and more granular than usual. *f*, mass of squamous epithelium, probably from one of the follicles of the mucous membrane of the bladder. *g*, free oil globules. *h*, portions of cotton fibre. *i*, portion of feather. × 215. pp. 343, 349.

$\frac{1}{1000}$ of an inch ⊢——⊣ × 215.

[To face page

URINARY DEPOSITS.

Fig. 90.

Casts containing oil from the urine of a case of fatty degeneration of the kidney of long standing. Many cells of epithelium contain no oil. × 215.

Fig. 92.

Cholesterine obtained from the fatty matter in casts separated from the urine of a case of fatty degeneration of the kidneys. Globules composed of non-crystallizable fat only are seen scattered in various parts of the field. × 215.

$\frac{1}{1000}$ of an inch ( ) × 215.

[To follow P...

URINARY DEPOSITS.

Fig. 92.

Casts of the uriniferous tubes, from a case of acute nephritis. × 215. pp. 345, 348.

Fig. 93.

Portion of a cast containing altered cells showing white blood corpuscles [illegible] × 700.

Fig. 94.

[Po]rtion of a cast with distinct cells, probably altered white blood corpuscles. × 700.

Fig. 95.

Shrivelled and wasted uriniferous tubes, from a kidney. No casts could be formed in these tubes. p. [illegible]

Fig. 96.

Dumb-bell crystals in casts, proving that these curious crystals are formed in the uriniferous tubes. From the urine of a case of cholera. The specimen containing these casts was the first portion passed after eighteen hours complete suppression. It contained a trace of albumen. Octahedra were present in the surrounding fluid. × 215.

p. [illegible]

$\frac{1}{1000}$ of an inch |____| × 215.

[illegible]

Fig. 97.

[Ordinary] granular deposit, usually termed [ur]ate or lithate of ammonia, but consisting [of ur]ate of soda with small quantities of [ur]ates of ammonia, lime, and magnesia. × 215. p. 351.

Fig. 98.

[Ur]ate of soda, prepared artificially. × 215. p. 351.

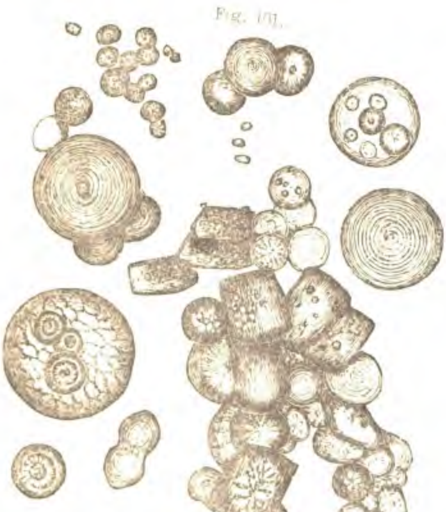
Fig. 99.

[Urate] of soda and films of triple phosphate, [f]ormed on the surface of concentrated urine. p. 351.

Fig. 100.

[Ur]ate of ammonia, prepared artificially. × 215. p. 351.

Fig. 101.



[Sph]erules of urate of soda, with crystals of uric acid. From a [ca]se of long continued remittent fever. Sent by Dr. Kennion, of Harrogate. × 215. p. 352.

$\frac{1}{1000}$ of an inch [scale] ×

Fig. 102.

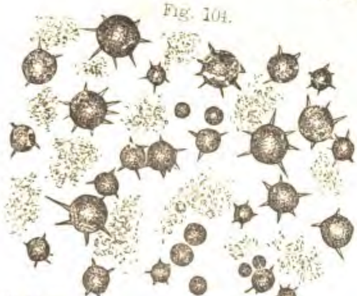
[Ur]ate of ammonia, prepared artificially. × 215. p. 351.

Fig. 103.

[Ur]ate of ammonia, prepared artificially. × 215. p. 351.

[To face page ...]

Fig. 104.



Urate of soda in spherical masses from various parts of which minute acicular crystals of uric acid project. × 215. p. 35[illegible].

Fig. 105.

Urate of soda in a [illegible] form, commonly found in the urine of children. × 215. p. 352.

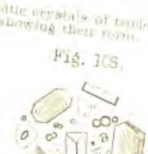
Fig. 106.

Crystals of ammoniaco-magnesian phosphate, with urates, mucus and pus corpuscles. From a case of catarrh of the bladder of a man age 40. Three years' standing. p. 355.

Fig. 107.

Prismatic crystals of triple phosphate showing their form. p. 35[illegible].

Fig. 108.



Crystals of ammoniaco-magnesian phosphate, from acid urine. × 215.

Fig. 109.

Urate of soda. Prepared artificially. × 215. p. [illegible]

Fig. 110.

[illegible] of urate of soda [illegible] with [illegible] corpuscles. × 215. p. [illegible]

[illegible] × 215.

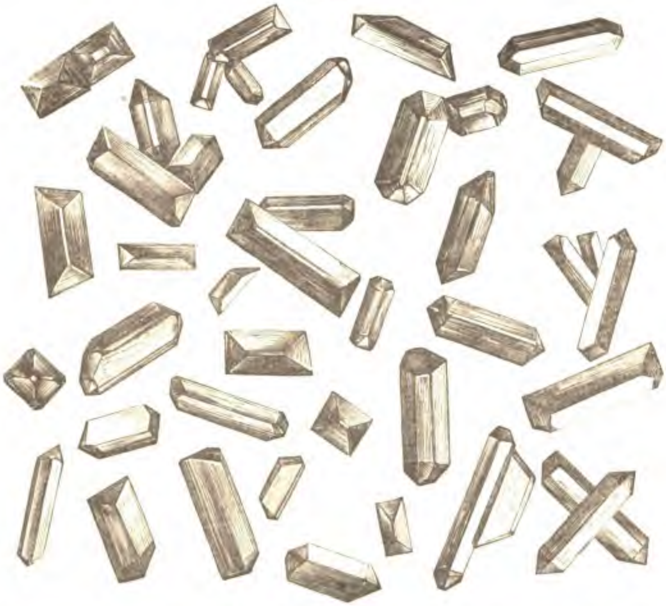
[redacted]

URINARY DEPOSITS.

Fig. 111.

[illegible] crystals of triple or ammoniaco-magnesian phosphate, and spherules of urate of soda × [illegible]. pp. 352, 359.

Fig. 112.



Triple phosphate [illegible] In the form of [illegible] prisms [illegible] extremities, as they frequently occur in urine. In many cases the crystals are [illegible] the ends of the crystals so short that the two triangular extremities are seen [illegible] together, and the crystal without care might be mistaken for an octahedron.
× [illegible] p. [illegible] See also Pl. XXXIII. Fig. [illegible]

$\frac{1}{100}$ of an inch [illegible]

$\frac{1}{1000}$ [illegible]

[illegible]

Fig. 113.

Crystals of triple phosphate formed by the addition of ammonia to urine. The crystals being rapidly developed are [illegible] in [illegible] [illegible] was like [illegible]. If however these remained for some time in the urine they would gradually assume the prismatic form. The more highly magnified drawing of one of the arms of a crystal in the upper part of the figure shows how this change in crystalline form takes place. × [illegible] p. 35[illegible]

Fig. 114.

Crystals of phosphate of lime occasionally met with in urine. × [illegible] p. [illegible]

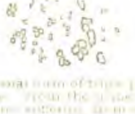
Fig. 115.

Drawing of a urinary deposit, consisting of crystals of phosphate of lime and [illegible] of oxalate of lime [illegible] × 215 p. 367

Fig. 116.

Phosphate of lime [illegible] [illegible] × [illegible]

Fig. 118.



Unusual form of triple phosphate. From the urine of a patient suffering [illegible] × [illegible] p. [illegible]

Fig. 117.

× 215

[illegible] dumb-bells of phosphate of lime. p. [illegible]

$\frac{1}{1000}$ of an inch [illegible] × 215

W. [illegible]

URINARY DEPOSITS.

Fig. 92.

Casts of the uriniferous tubes, from a case of acute nephritis. × 215. pp. 345, 348

Fig. 93.

Portion of a cast, containing altered and growing white blood corpuscles. [illegible] nephritis. × 700.

Fig. 94.

[illegible]rtion of a cast with distinct cells, probably altered white blood corpuscles. × 700.

Fig. 95.

[illegible]hrivelled and wasted uriniferous tubes, from a kidney. No casts could be formed in these tubes. p. 341.

Fig. 96.

Dumb-bell crystals in casts, proving that these curious crystals are formed in the uriniferous tubes. From the urine of a case of cholera. The specimen containing these casts was the first portion passed after eighteen hours complete suppression. It contained a trace of albumen. Octahedra were present in the surrounding fluid. × 215.

p. 341.

$\frac{1}{1000}$ of an inch |____| × 215.

[To face [illegible]]

URINARY DEPOSITS.

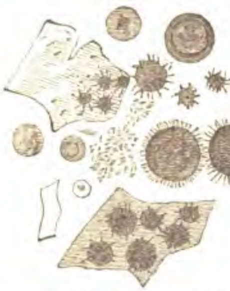
Fig. 97.

granular deposit usually termed ... of ammonia, but consisting ... of soda with small quantities of ... ammonia, lime, and magnesia. × 215. p. 351.

Fig. 98.

Urate of soda, prepared artificially. × 215. p. 351.

Fig. 99.

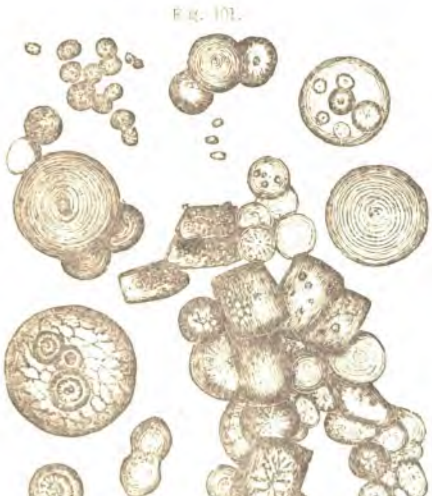


... soda and films of triple phosphate, formed on the surface of concentrated urine. p. 351.

Fig. 100.

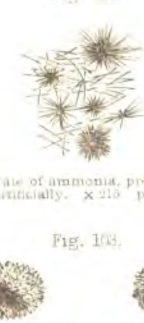
Urate of ammonia prepared artificially. × 215. p. 351.

Fig. 101.



... of urate of soda, with crystals of uric acid. From a ... Sent by Dr. Kennion, of Harrogate. × 215. p. 352.

Fig. 102.



Urate of ammonia, prepared artificially. × 215. p. 351.

Fig. 103.

... of ammonia, prepared artificially. × ... p. 351.

$\frac{1}{1000}$ of an inch ⌊___⌋ × ...

[To face page ...

Fig. 104.

Urate of soda in spherical masses from various parts of which minute acicular crystals of uric acid project. × 215. p. 352.

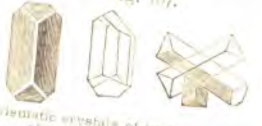
Fig. 105.

Urate of soda in a globular form, commonly found in the urine of children. × 215. p. 352.

Fig. 106.

Crystals of ammoniaco-magnesian phosphate, with urates, mucus and pus corpuscles. From a case of catarrh of the bladder of a man age 40. Three years' standing. p. 355.

Fig. 107.



Prismatic crystals of triple phosphate showing their form. p. 355.

Fig. 108.

Crystals of ammoniaco-magnesian phosphate from acid urine. × 215.

Fig. 109.

Urate of soda [illegible] × [illegible]

Fig. 110.

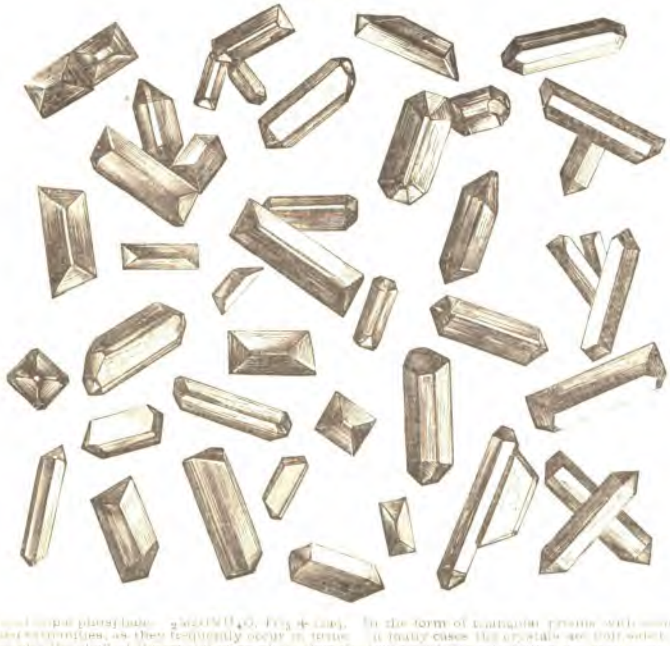
[illegible]

URINARY DEPOSITS.

Fig. 111.

[illegible] crystals of triple or ammoniaco-magnesian phosphate, and spherules of urate of soda [illegible] × 100. pp. 352, 355.

Fig. 112.



[illegible] triple phosphate, [illegible] In the form of triangular prisms with [illegible] extremities, as they frequently occur in urine. In many cases the crystals are [illegible] the shaft of the crystal is so short that the two triangular extremities are seen upon [illegible] each other, and the crystal, without care, might be mistaken for an octahedron. × 100. p. 445. See also Pl. XXXIII. Fig. 289.

$\frac{1}{100}$ of an inch [illegible]

$\frac{1}{1000}$ [illegible]

Fig. [illegible]

[illegible]

Fig. 114.

[illegible]

Fig. [illegible]

[illegible]

Fig. [illegible]

[illegible]

Fig. [illegible]

[illegible]

Fig. [illegible]

× 215

[illegible]

URINARY DEPOSITS.

Fig. 119.

Phosphate of lime crystallized in the form of fan-like tufts. × 215. p. 358.

Fig. 120.

Two forms of phosphate of lime mounted in Canada balsam. × 215. p. 358.

Fig. 121.

Crystals of triple phosphate and phosphate of lime. × 130. p. 358.

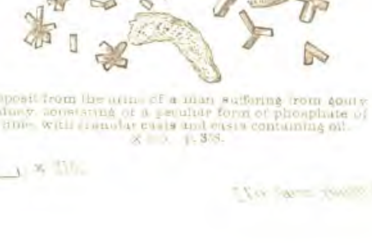
Fig. 122.

Phosphate of lime. From urine. × 430. p. 358.

Fig. 123.

Phosphate and oxalate of lime, from the urine of a young man enjoying good health, but taking little exercise. × 215. p. 358.

Fig. 124.



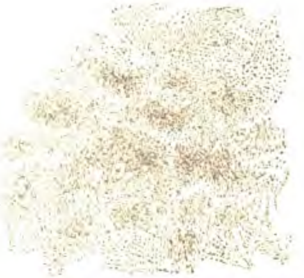
Deposit from the urine of a man suffering from gouty kidney, consisting of a peculiar form of phosphate of lime, with granular casts and casts containing oil. × 215. p. 358.

$\frac{1}{1000}$ of an inch ( ) × 215.

[To face page 358.]

URINARY DEPOSITS.

Fig. 97.



[illegible] granular deposit, usually termed [illegible] of ammonia, but consisting [illegible] of soda with small quantities of [illegible] of ammonia, lime and magnesia. × 215. p. 351.

Fig. 98.

Urate of soda, prepared artificially. × 215. p. 351.

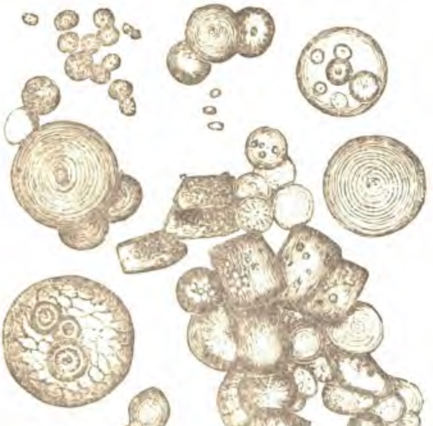
Fig. 99.

[illegible] soda and films of triple phosphate, formed on the surface of concentrated urine. p. [illegible]

Fig. 100.

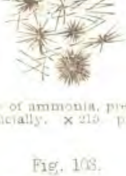
Urate of ammonia, prepared artificially. × 215. p. 351.

Fig. 101.



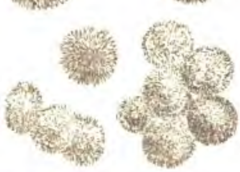
[illegible] of urate of soda, with crystals of uric acid. From a case of long-continued remittent fever. Sent by Dr Kennion, of Harrogate. × 215. p. [illegible]

Fig. 102.



Urate of ammonia, prepared artificially. × 215. p. 351.

Fig. 103.



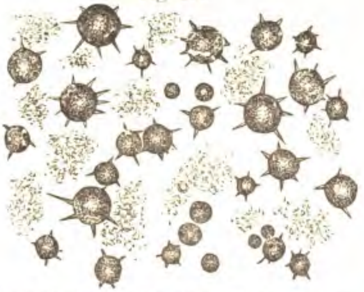
Urate of ammonia, prepared artificially. × 215. p. 351.

$\frac{1}{1000}$ of an inch [illegible] × [illegible]

[To face page [illegible]

URINARY DEPOSITS.

Fig. 104.



Urate of soda in spherical masses from various parts of which minute acicular crystals of uric acid project. × 215. p. [illegible]

Fig. 105.

Urate of soda in a globular form, commonly found in the urine of children. × 215. p. [illegible]

Fig. 106.

Crystals of ammoniaco-magnesian phosphate with urates, mucus and pus corpuscles. From a case of catarrh of the bladder of a man age 40. Three years' standing. p. 355.

Fig. 107.

Prismatic crystals of triple phosphate, showing their form. p. [illegible]

Fig. 108.

Triple or ammoniaco-magnesian phosphate, from acid urine. × 215.

Fig. 109.

Urate of soda, prepared artificially. × [illegible] p. [illegible]

Fig. 110.

[illegible]

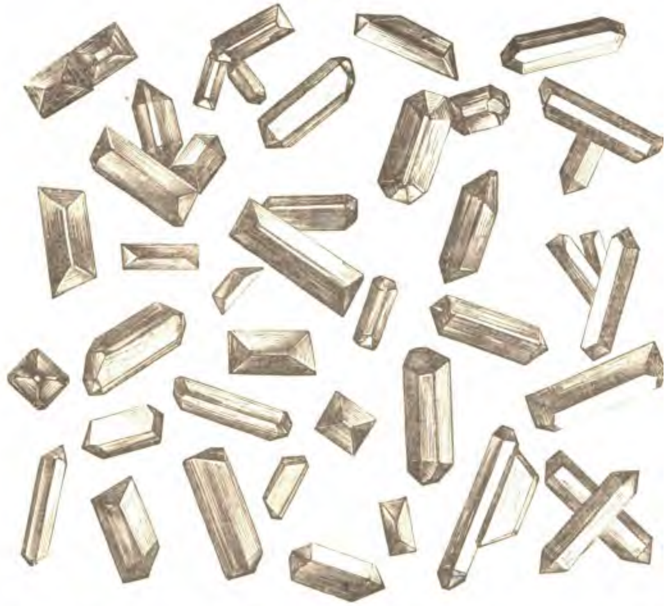
[illegible]

URINARY DEPOSITS.

Fig. 111.

[illegible] crystals of [illegible] ammoniaco-magnesian phosphate and spherules of urate of sod[illegible]
× 210. pp. 35[illegible], 35[illegible].

Fig. 112.



[illegible] phosphate [illegible] In the form of triangular prisms with [illegible] truncated extremities, as they frequently occur in urine. In many cases the crystals are [illegible] consequently the shaft of the crystal is so short that the two triangular extremities are seen [illegible] together, and the crystal, without care, might be mistaken for an octahedron.
× [illegible] p. [illegible]. See also Pl. XXXIII. [illegible]

$\frac{1}{100}$ of an inch [illegible] × [illegible]

$\frac{1}{1000}$ [illegible]

[illegible]

Fig. 113.

Crystals of triple phosphate formed by the addition of ammonia to urine; the crystals being rapidly developed are precipitated in the very feathery star-like form. If, however, these remained for some time in the urine they would gradually assume the prismatic form. The more highly magnified drawing of one of the arms of a crystal in the upper part of the figure shows how this change in crystalline form takes place. × [illegible] p. 3[illegible]

Fig. 114.

Crystals of phosphate of lime [illegible] occasionally met with in urine. × [illegible] p. [illegible]

Fig. 115.

Drawing of a urinary deposit consisting of crystals of phosphate of lime and [illegible] carbonate of lime [illegible]. × 215. p. [illegible]

Fig. 116.

[illegible]

Fig. 117.

[illegible] form of triple phosphate. From the urine of a patient suffering from [illegible] [illegible] × [illegible] p. [illegible]

Fig. 118.

× 215

[illegible] of phosphate of lime. p. [illegible]

$\frac{1}{1000}$ [illegible]

W[illegible]

URINARY DEPOSITS.

Fig. 119.

Phosphate of lime crystallized in the form of fan-like plates. × 215. p. 358.

Fig. 120.

Two forms of phosphate of lime mounted in Canada balsam. × 215. p. 358.

Fig. 121.

Crystals of triple phosphate and phosphate of lime. × 130. p. 358.

Fig. 122.

Phosphate of lime. From urine. × 130. p. 358.

Fig. 123.

Phosphate and oxalate of lime, from the urine of a young man enjoying good health, but taking little exercise. × 215. p. 358.

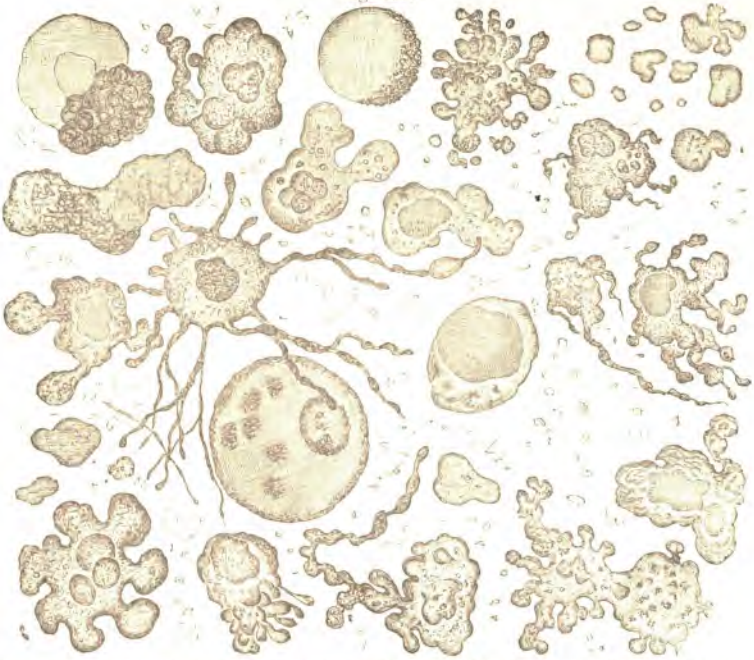
Fig. 124.

Deposit from the urine of a man suffering from gouty kidney, consisting of a peculiar form of phosphate of lime, with granular casts and casts containing oil. × 215. p. 358.

$\frac{1}{1000}$ of an inch ⌊___⌋ × 215.

[To face page 358.]

Fig. 125.



Pus corpuscles exhibiting very active movements. From the bladder of a patient suffering from chronic inflammation. Showing alterations in form due to (vital ?) movements. × 1000. p. 384.

Fig. 126.

Pus corpuscles from urine. × 215. p. 381.

Fig. 127.

Pus corpuscles which have been acted upon by acetic acid. p. 381.

Fig. 128.

Pus corpuscles under the action of acetic acid. *a*, action commencing. *b*, complete. × 215. p. 381.

Fig. 130.

Formation of pus from germinal matter of epithelial cells. × 215. p. 382.

Fig. 129.

Pus corpuscles showing [illegible]. × 700. p. 380.

Fig. 132.

Multiplication of pus corpuscles by detachment of protruding portions from each corpuscle. × 700. p. 380.

Fig. 131.

Growth and multiplication of pus corpuscles [illegible] p. [illegible]

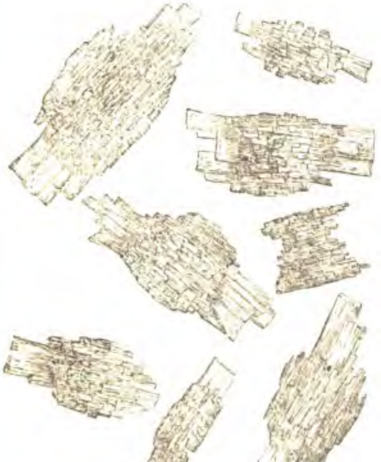
(To face page [illegible].

URINARY DEPOSITS.

Fig. 133.

Groups of crystals of uric acid, often termed "cayenne-pepper grains" with octahedra of oxalate of lime. × 215.

Fig. 134.



Masses of small uric acid crystals. × 215.

Fig. 135.

Beautiful aggregations of uric acid. × 215.

To face page 3

Fig. 136.

Large fiddle-shaped flattened crystals of uric acid × 130.

Fig. 137.

Uric acid from urine × 130.

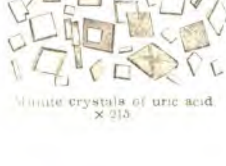
Fig. 138.

Curious forms of uric acid from urine. × 215.

Fig. 139.

Large halbert-shaped crystals of uric acid. *a*, 'cayenne-pepper' grain × 215.

Fig. 140.



Minute crystals of uric acid × 215.

$\frac{1}{1000}$ of an inch ⊔ × 130.

⊔ × 215

[To follow PLATE XXV

Fig. 113.

Crystals of triple phosphate formed by the addition of ammonia to urine. The crystals being rapidly developed are [illegible] star-like form. If however these remained for some time in the urine they would gradually assume the prismatic form. The more highly magnified drawing of one of the arms of a crystal in the upper part of the figure shows how this change in crystalline form takes place. × [illegible] p. [illegible]

Fig. 114.

Crystals of phosphate of lime occasionally met with in urine. × [illegible] p. [illegible]

Fig. 115.

Drawing of a urinary deposit, consisting of [illegible] phosphate of lime and [illegible] × 215 p. [illegible]

Fig. 116.

[illegible] of lime [illegible] × [illegible]

Fig. 117.

[illegible] form of triple phosphate [illegible] × [illegible] p. [illegible]

Fig. 118.

Large dumb-bells of [illegible] × 215 p. [illegible]

[illegible]

[Dr. [illegible] pinxit.]

URINARY DEPOSITS.

Fig. 119.

Phosphate of lime crystallized in the form of fan-like plates. × 215. p. 358.

Fig. 120.

Two forms of phosphate of lime mounted in Canada balsam. × 215. p. 358.

Fig. 121.

Crystals of triple phosphate and phosphate of lime. × 430. p. 358.

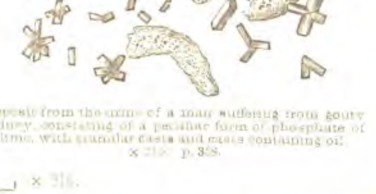
Fig. 122.

Phosphate of lime. From urine. × 130. p. 358.

Fig. 123.

Phosphate and oxalate of lime, from the urine of a young man enjoying good health, but taking little exercise. × 215. p. 358.

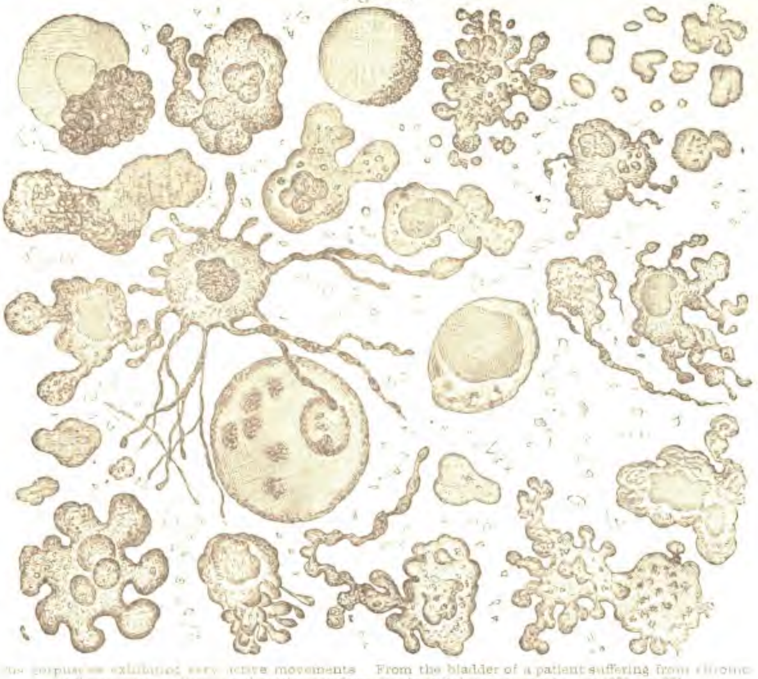
Fig. 124.



Deposit from the urine of a man suffering from gouty kidney, consisting of a peculiar form of phosphate of lime, with granular casts and mucus containing oil. × 215. p. 358.

$\frac{1}{1000}$ of an inch ⌴ × 215.

Fig. 125.



Pus corpuscles exhibiting very active movements. From the bladder of a patient suffering from chronic inflammation. Showing alterations in form due to (vital ?) movements. × 1300. p. 364.

Fig. 126.

Pus corpuscles from urine. × 215. p. 364.

Fig. 127.

× 403

Pus corpuscles which have been acted upon by acetic acid. p. 364.

Fig. 128.

a b

Pus corpuscles under the action of acetic acid. a, action commencing. b, complete. × 215. p. 364.

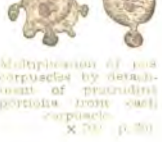
Fig. 130.

Formation of pus from germinal matter of epithelial cells. × 215. p. 364.

Fig. 129.

Pus corpuscles showing protrusions. × 700. p. 364.

Fig. 132.



Multiplication of pus corpuscles by detachment of protruding portions from each corpuscle. × 700. p. 364.

Fig. 131.

Growth and multiplication of pus corpuscles when in mucus.

(To face page)

URINARY DEPOSITS.

Fig. 133.

Groups of crystals of uric acid, often termed 'cayenne-pepper grains' with octahedra of oxalate of lime. × 215.

Fig. 134.

Masses of small uric acid crystals. × 215.

Fig. 135.

Beautiful aggregations of uric acid. × 215.

of an inch × 215.

To face pag

Fig. 136.

Large fiddle-shaped flattened crystals of uric acid × 130.

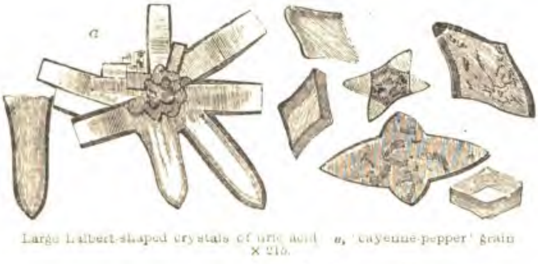
Fig. 137.

Uric acid from urine × 130.

Fig. 138.

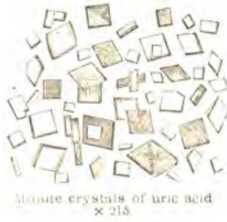
Curious forms of uric acid from urine × 215.

Fig. 139.



Large halbert-shaped crystals of uric acid; *a*, 'cayenne-pepper' grain × 215.

Fig. 140.



Minute crystals of uric acid × 215.

$\frac{1}{1000}$ of an inch |__| × 130.
„ „ |___| × 215.

[To follow PLATE XXIV.]

URINARY DEPOSITS.

Fig. 141.

Curious lamellar crystals of uric acid, perfectly colourless. Sent by Mr. Lawrence. × 215.

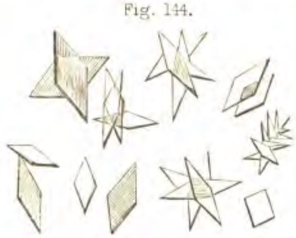
Fig. 142.

Lozenge-shaped crystals of uric acid, precipitated by the addition of acid to urine. × 215.

Fig. 143.

Crystals of uric acid from urine. × 130.

Fig. 144.

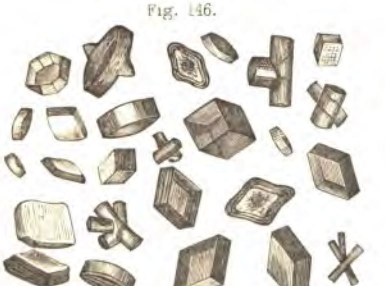


Lozenge-shaped crystals of uric acid obtained by adding acid to urine. × 215.

Fig. 145.

Common forms of uric acid crystals.

Fig. 146.



Common rhomboidal and cubical forms of uric acid from urine. × 215.

Fig. 147.

Large crystals of uric acid, deposited in urine after standing. × 130.

1 of an inch 1 1 × 130

L

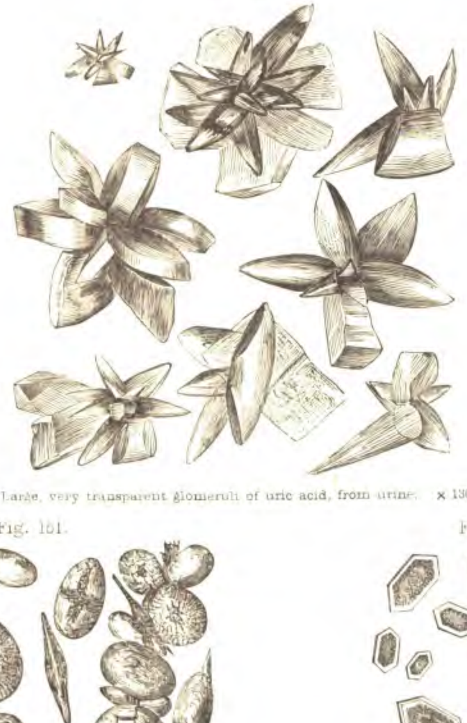
Fig. 148.

Rhomboidal crystals of uric acid. Very common form.
× 215.

Fig. 149.

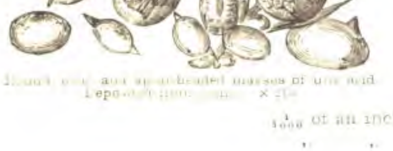
Curious forms of uric acid, deposited in the urine of a case of fatty degeneration of the kidneys. × 130.

Fig. 150.



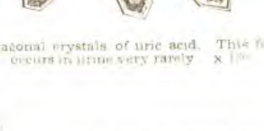
Large, very transparent glomeruli of uric acid, from urine. × 130.

Fig. 151.



Round, oval, and spear-headed masses of uric acid. Deposited from urine. × 215.

Fig. 152.



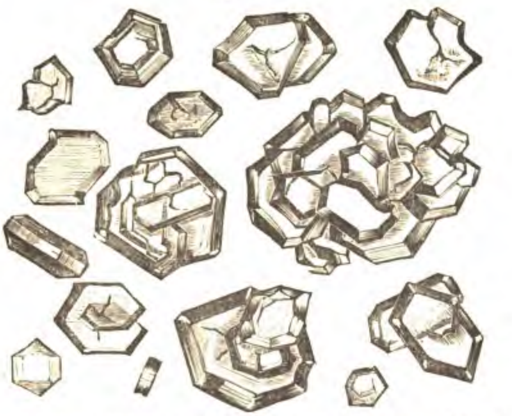
Hexagonal crystals of uric acid. This form occurs in urine very rarely. × 130.

$\frac{1}{1000}$ of an inch × 130.

[To follow PLATE XXVI.]

URINARY DEPOSITS.

Fig. 153.



Perfectly colourless crystals of uric acid resembling cystine. From the urine of an epileptic patient. Sent by Dr. Head. × 215.

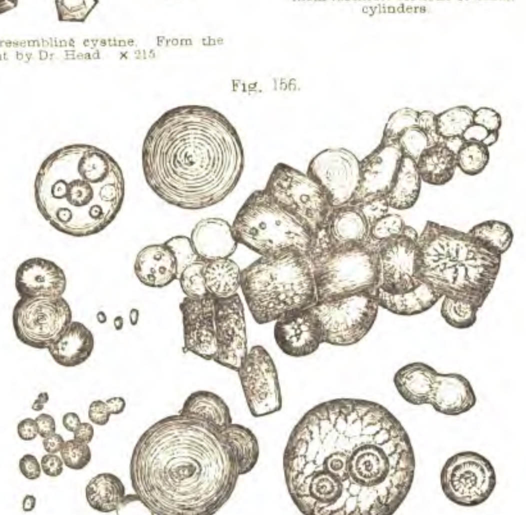
Fig. 154.

Small crystals of uric acid of a rhomboidal form; many of them resemble sections of small cylinders.

Fig. 155.

a, large spherules of urate of soda. b, film composed partly of urate of soda and partly of uric acid. c, uric acid. From the urine of a case of long-continued bilious and remittent fever. Sent by Dr. Kennion. × 42.

Fig. 156.

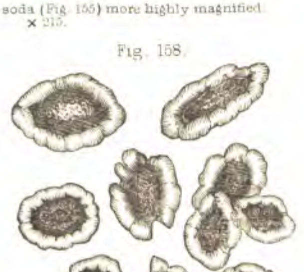


The spherules of urate of soda (Fig. 155) more highly magnified. × 215.

Fig. 157.

Dumb-bell-like crystals of uric acid, obtained by adding hydrochloric acid to urine. Sent by T. W. Roper, Esq. × 215.

Fig. 158.



Crystals of uric acid, partly disintegrated. From a specimen which had been preserved for many years in the naphtha and creosote fluid. × 215.

$\frac{1}{1000}$ of an inch ⌴ × 42.

,, ,, ⌴ × 215.

[To follow PLATE XXVII.

[redacted]

PLATE XXIX.

URINARY DEPOSITS.

Fig. 164.

URINARY DEPOSITS.

PLATE XXXI.

Fig. 169.

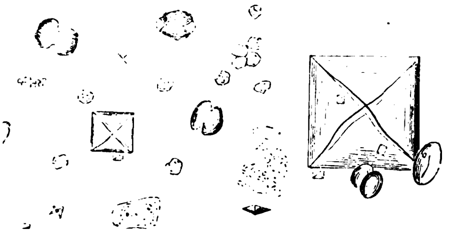
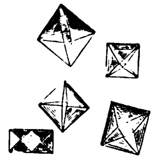


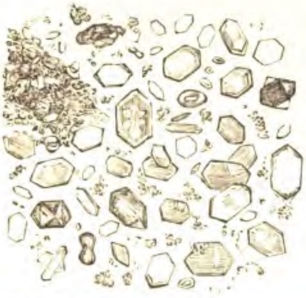
Fig. 170.



Octahedral crystals of oxalate of lime. × 215

URINARY DEPOSITS.

Fig. 176.



Modified forms of oxalate of lime. From the urine of a man who was poisoned by oxalic acid. p. 382. × 215.

Fig. 177.

Some of the crystals in Fig. 176 magnified 550. p. 38

Fig. 178.

Beautiful feathery crystals of phosphates of lime and magnesia, with collections of octahedra of oxalate of lime, the angles of which are rounded. p. 380. × 215.

Fig. 179.

Small globules and octahedra of oxalate of lime.

Fig. 179*.

Beautiful crystals of triple phosphate, exhibiting peculiar markings resulting from partial solution. × 215.

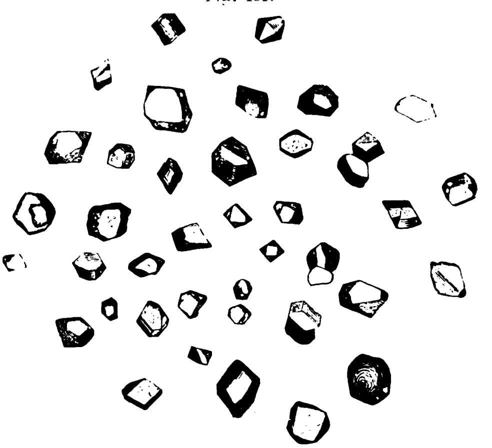
Fig. 180.

Crystals of triple phosphate; the prismatic portion of which is defective, and casts containing oil from the urine of a patient suffering from chronic nephritis, with partial fatty degeneration. p. 380.

$\frac{1}{1000}$ of an inch, × 215.

URINARY DEPOSITS.

Fig. 181.

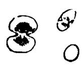


[illegible] form of triple phosphate or phosphate of lime and triple phosphate. × 150. Sent by Mr. Richardson, of Dublin.

Fig. 181*.

Octahedra and dumb-bells of oxalate of lime, and curious forms of fungi found in the urine of a young man passing much oxalate of lime. × 215.

Fig. 184.



Dumb-bells subjected to the prolonged action of acetic acid, showing the crystalline material nearly dissolved away. p. 377.

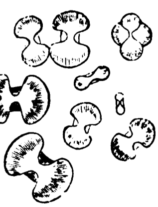
Fig. 182.

Collection of dumb-bells firmly adherent to each other. Such a mass might very easily become converted into a small calculus by deposition of material of a similar composition in the intervals. p. 379. × 215.

Fig. 183.

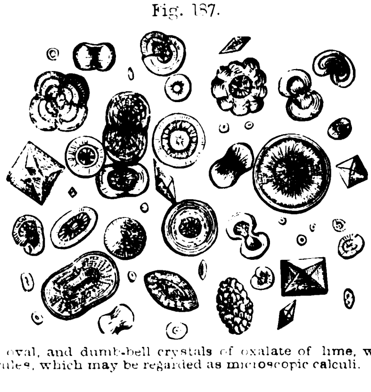
Minute crystals of oxalate of lime, with sporules of fungi resembling blood corpuscles. × 215.

Fig. 185.



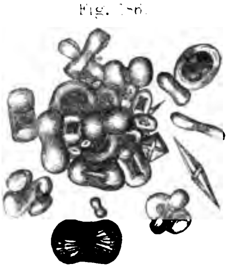
Perfect dumb-bell crystals from the urine of a child, two years old, suffering from jaundice. p. 379. × 215.

Fig. 187.



Spherical, oval, and dumb-bell crystals of oxalate of lime, with larger spherules, which may be regarded as microscopic calculi. × 215.

Fig. 186.



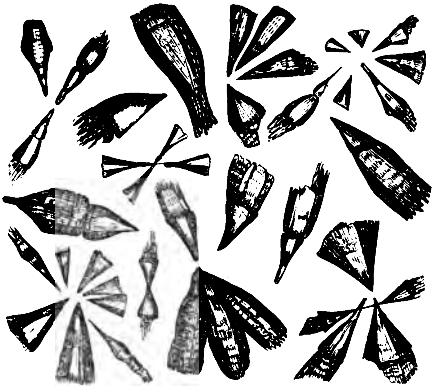
Dumb-bell crystals of oxalate of lime aggregated together, and forming a minute calculus. p. 379. × 215.

$\frac{1}{1000}$ of an inch | | × 215.

[To follow PLATE XXXII.]

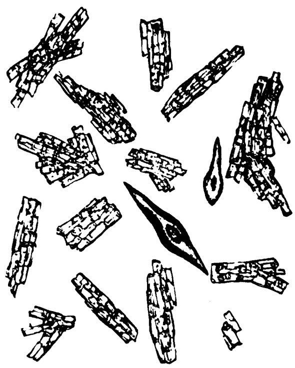
[redacted]

Fig. 164.



Quadrilateral pyramidal crystals of uric acid. Precipitated from urine by nitric acid. × 215. p. 371.

Fig. 165.



Uric acid from the urine of a case of fatty degeneration of the kidneys. × 45.

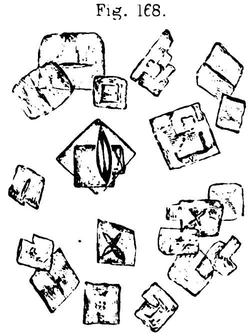
Fig. 166.

Less common forms of uric acid crystals. *a*, crystal like cayenne-pepper grain. *b*, six-sided crystals. *c*, mass with small uric acid crystals projecting from it. *d*, small pyramidal crystals of uric acid; very uncommon. *e*, peculiar forms of uric acid.

Fig. 167.

Irregularly shaped crystalline plates, consisting of uric acid. From urine. × 215.

Fig. 168.

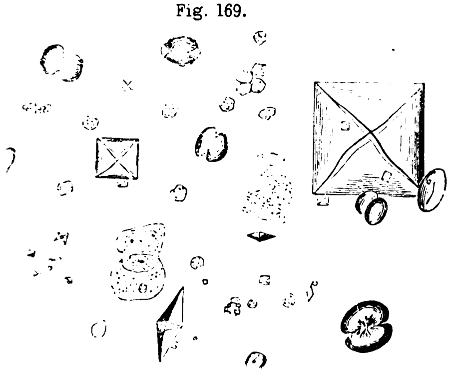


Two forms of uric acid. From a specimen of urine sent by Mr. Atchley. × 45.

$\frac{1}{1000}$ of an inch × 42.

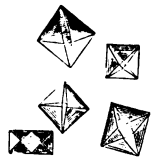
× 2

Fig. 169.



ell and octahedral crystals of oxalate of lime. One very large edron is seen at the right-hand side of the figure. × 215. p. 378.

Fig. 170.

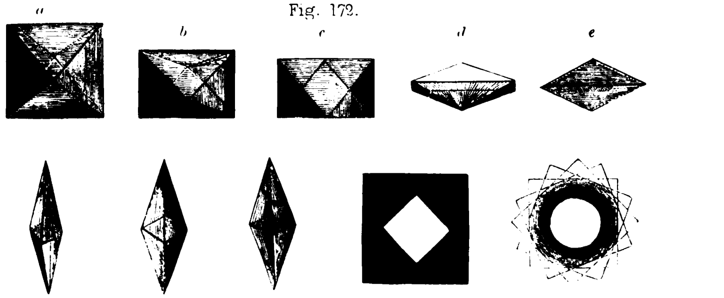


Octahedral crystals of oxalate of lime. × 215

Fig. 171.

Curious prismatic crystal of oxalate of lime. p. 375.

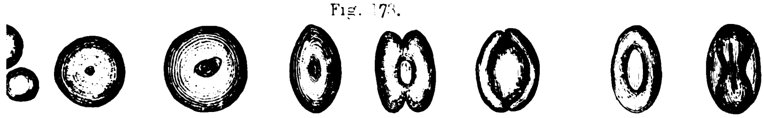
Fig. 172.



a b c d e f g h i k

c. d. e. to illustrate the appearance of the same octahedron of oxalate of lime viewed in different positions crystal is supposed to be seen first lying upon one of its broad surfaces, and then gradually rotated FROM observer until one edge is opposite the eye. f. g. h. the same crystal seen sideways, one of the lateral angles g towards the eye. i. the appearance of an octahedron when mounted as a dry object. k. unusual form of compound crystal of oxalate of lime. p. 375.

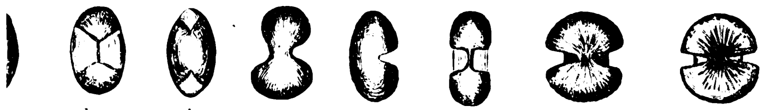
Fig. 173.



b c d e f g h

Circular and oval forms. p. 377. Dumb bell crystals and allied forms of oxalate of lime. p. 377.

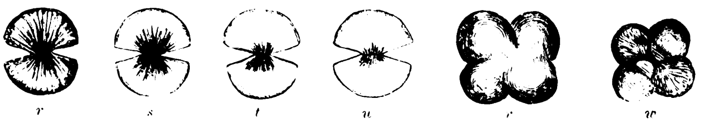
Fig. 174.



k l m n o p q

ell crystals and allied forms of oxalate of lime. Crystals approximating in form to the perfect dumb-bell.

Fig. 175.



r s t u v w

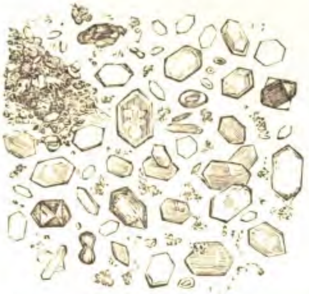
erfect dumb-bell crystals of oxalate of lime which have been subjected to the prolonged action of weak acetic acid, by which much of the salt has been dissolved out from the organic matrix which exhibits the appearance of a cell wall. p. 376.

Masses consisting of two dumb-bell crystals joined together.

1/1000 of an inch

URINARY DEPOSITS.

Fig. 176.



Modified forms of oxalate of lime. From the urine of a man who was poisoned by oxalic acid. p. 382. × 215.

Fig. 177.

Some of the crystals in Fig. 176 magnified 550. p. 38

Fig. 178.

Beautiful feathery crystals of phosphates of lime and magnesia, with collections of octahedra of oxalate of lime, the angles of which are rounded. p. 380. × 215.

Fig. 179.

Small globules and octahedra of oxalate lime.

Fig. 179*.

Beautiful crystals of triple phosphate, exhibiting peculiar markings resulting from partial solution. × 215.

Fig. 180.

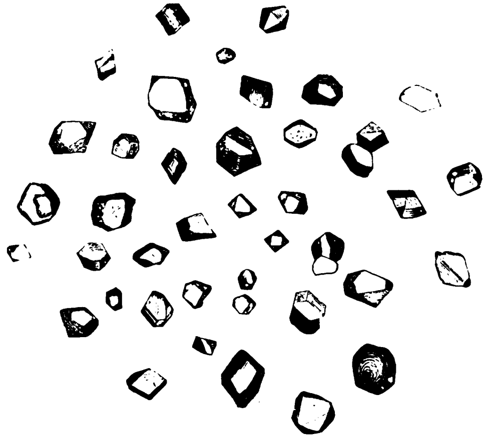
Crystals of triple phosphate; the prismatic portion o which is defective, and casts containing oil from the urin of a patient suffering from chronic nephritis, with partia fatty degeneration. p. 380.

$\frac{1}{1000}$ of an inch ⊢—⊣ × 215.

[To follow PLATE XXXI

URINARY DEPOSITS.

Fig. 181.

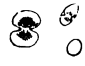


... form of triple phosphate or phosphate of lime and triple phosphate. × 150. Sent by Mr. Richardson, of Dublin.

Fig. 181*.

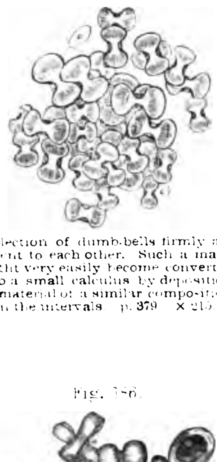
Octahedra and dumb-bells of oxalate of lime, and curious forms of fungi found in the urine of a young man passing much oxalate of lime. × 215.

Fig. 184.



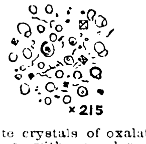
Dumb-bells subjected to the prolonged action of acetic acid, showing the crystalline material nearly dissolved away. p. 377.

Fig. 182.



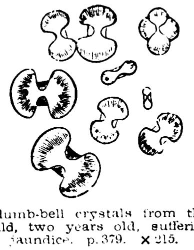
Collection of dumb-bells firmly adherent to each other. Such a mass might very easily become converted into a small calculus by deposition of material of a similar composition in the intervals. p. 379. × 215.

Fig. 183.



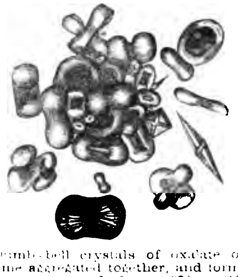
Minute crystals of oxalate of lime, with sporules of fungi resembling blood corpuscles. × 215.

Fig. 185.



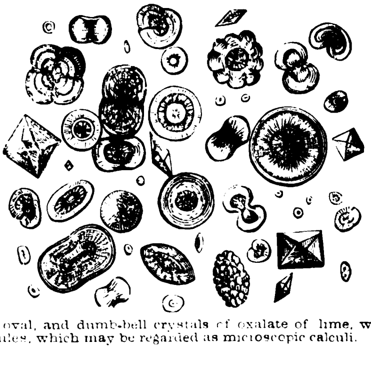
Perfect dumb-bell crystals from the urine of a child, two years old, suffering from jaundice. p. 379. × 215.

Fig. 186.



Dumb-bell crystals of oxalate of lime aggregated together, and forming a minute calculus. p. 379. × 215.

Fig. 187.

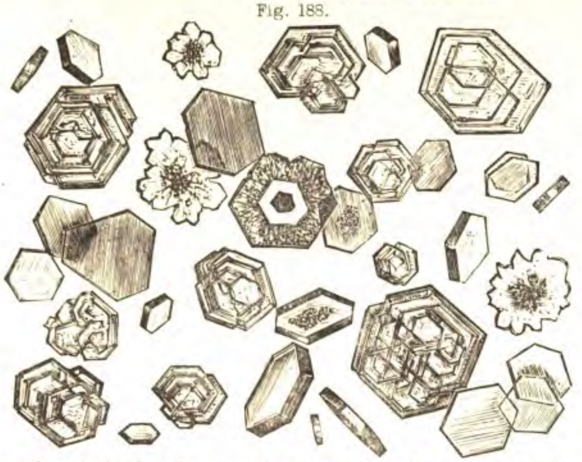


Spherical, oval, and dumb-bell crystals of oxalate of lime, with larger spherules, which may be regarded as microscopic calculi. × 215.

$\frac{1}{1000}$ of an inch | | × 215.

[To follow PLATE XXXII.

Fig. 188.



Crystals of cystine from the urine of an insane patient. Numerous crystals of uric acid were also present in the deposit. p. 383. × 215

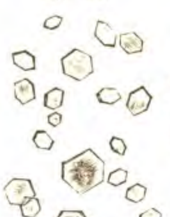
Fig. 189.

Crystals of cystine. p. 383. × 215.

Fig. 190.

Clusters of crystals of cystine, formed by evaporating a solution of the crystals represented in Fig. 188 in ammonia. × 215.

Fig. 191.



Six-sided crystals of cystine, formed from a solution of the crystals in ammonia.

Fig. 192.

Irregularly formed crystals of cystine, formed by allowing the ammoniacal solution (Figs 190, 191) to evaporate to dryness. × 215.

Fig. 193.

Crystals of carbonate of lime, seen by reflected light. p. 387.

Fig. 196.

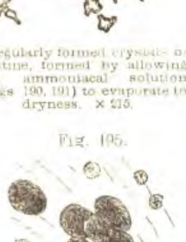
Crystals of carbonate of lime, in Canada balsam, seen by transmitted light. p. 387.

Fig. 194.

× 215

Blood corpuscles, *a, b, c,* taken from the living body; *d, e, f,* from the urine. *d,* corpuscles smaller than natural; at *e* their circumference is serrate and ragged; and at *f* a somewhat similar appearance is shown. p. 388.

Fig. 195.



Large cells filled with granular matter; chronic bronchitis. p. 393.

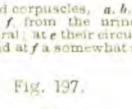
Fig. 199.

Epithelium from the uriniferous tubes and pelvis of the kidney, with granules of colouring matter embedded in them. p. 390. × 215

Fig. 200.

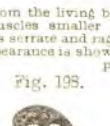
Altered blood from [illegible] intestinal secretion. p. 388

Fig. 197.



Tubercle corpuscles from a tubercle in the lung. p. 391. × 215.

Fig. 198.



Cells found in the urine of a case of renal dropsy. p. 393.

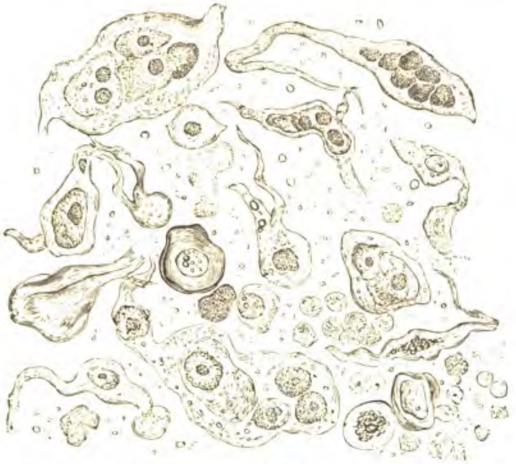
Fig. 201.

Rhomboidal and feathery crystals of hæmatoidin from a softened clot. Human. p. 389. × 215.

Fig. 202.

Feathery crystals of hæmatoidin found in the urine a fortnight after slight rupture (?) of one kidney. Human subject. p. 389. × 215.

Fig. 203.



Cancer cells from the urine in a very bad case of cancer of the uterus. The deposit was very abundant. p. 394.

Fig. 204.

Cancer cells found in urine. From the bladder. p. 394.

Fig. 205.

Cells from the urine of a case of acute rheumatism. *a*, in the natural state. *b*, treated with acetic acid. *c*, resembling pus. *d*, the same treated with acetic acid. The small circular bodies are blood corpuscles. p. 395.

Fig. 206.

Blood clots in the form of irregularly shaped cords. From the vagina, found in urine. p. 390. × 215.

$\frac{1}{1000}$ of an inch |___| × 215.

All these figures × 215.

Fig. 1.

Layers of which the wall of an hydatid cyst is composed. p. 397. × 215.

Fig. 2.

Echinococci from hydatid. Liver of ox. p. 398. × 40.

Fig. 3.

Echinococci. p. 398. × 42.

Fig. 4.

Free hooklets from echinococcus. p. 399. × 215.

Fig. 5.

Hooklet of echinococcus. p. 399. × [illegible].

Fig. 6.

Tænia echinococcus. p. 398. × 15.

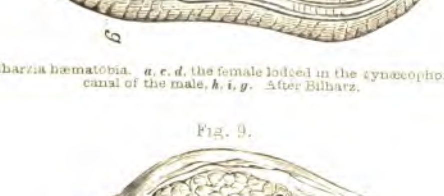
Fig. 7.

Diplosoma crenata; one-half the real size. After Dr. Farre. p. 399.

Fig. 8.

Ova of bilharzia hæmatobia in urinary deposit. Drawn from a preparation of Dr. Harley's. p. 401. × 15.

Fig. 11.



Bilharzia hæmatobia. *a, c, d,* the female lodged in the gynæcophoric canal of the male, *h, i, g*. After Bilharz.

Fig. 10.

Ova of bilharzia hæmatobia, from urine. Drawn from Dr. Harley's preparations. p. 401. × 100.

Fig. 9.

Ovum of bilharzia hæmatobia, from a specimen of Dr. John Harley's. p. 401. × 215.

$\frac{1}{1000}$ of an inch × 100

URINARY CALCULI.

Fig. 1.

Large uric acid calculus, consisting of concentric layers of uric acid, deposited upon a smaller calculus composed of oxalate of lime. p. 407.

Fig. 2.

A beautiful example of oxalate of lime c... culus, the surface of which is of a pale brov... colour, and the tubercles small and delica... p. 4...

Fig. 3.

Mulberry calculus which was of a rich plum colour. p. 411.

Fig. 4.

Small prostatic calculi. p. 415.

Fig. 5.

Large mulberry calculus, two-thirds the n... size. p. 411.

Fig. 6.

Phosphatic calculus. The composition of the central portion is different to that of the body of the nucleus. p. 413.

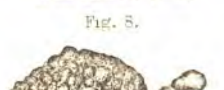
Fig. 7.

Blood calculus from one of the infundibula of the kidney. p. 409.

Fig. 9.

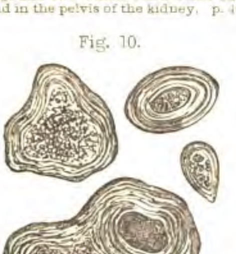
Phosphatic calculus. The nucleus bei... composed of a small uric acid calculus. p. 41...

Fig. 8.



One large and two small black blood calculi, found in the pelvis of the kidney. p. 409.

Fig. 10.



Small phosphatic calculi, from the kidney. The nuclei are composed of a soft granular material, probably consisting of disintegrated epithelium. p. 413. × 130.

Fig. 11.

Very small calculi, from the follicles of the prostate gland of a man aged 4... who died of pneumonia of three weeks' duration. The structure of th... bladder and prostate seemed perfectly healthy. *a*, calculi composed of ... number of smaller ones; *b*, very small calculus containing a single granula... cell in the interior; *c*, calculi composed of a collection of cells around whic... the hard material has been deposited; *d*, calculus in which the nucleu... seems to be crystalline; *e*, epithelium from the ducts of the prostate. p. 41... × 215.

$\frac{1}{1000}$ of an inch ⊢⊣ × 315.

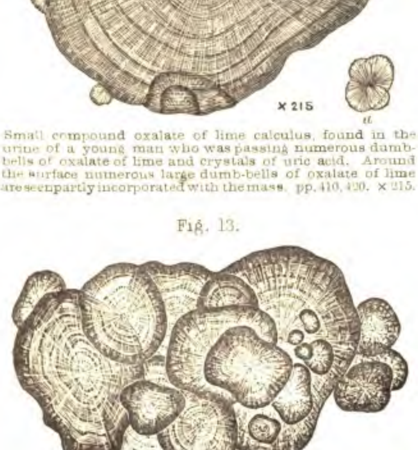
[To face page 41...

URINARY CALCULI.

Fig. 12.

Small compound oxalate of lime calculus, found in the urine of a young man who was passing numerous dumb-bells of oxalate of lime and crystals of uric acid. Around the surface numerous large dumb-bells of oxalate of lime are seen partly incorporated with the mass. pp. 410, 420. × 215.

Fig. 13.



Compound oxalate of lime calculus, from the same case as that shown in Fig. 12. pp. 410, 420. × 130.

Fig. 14.

Urinary deposit, consisting of crystals of triple phosphate and numerous smooth and irregularly shaped microscopic oxalate of lime calculi. From a patient suffering from symptoms of renal calculus. Sent by Dr Cotton. p. 420. × 215.

Fig. 15.

The same calculi as shown in Fig. 14, after being treated with acetic acid, dried and mounted in Canada balsam. The nuclei and concentric layers of each individual calculus have been rendered beautifully distinct. p. 420. × 215.

$\frac{1}{1000}$ of an inch |—| × 215.

[To face page 420.

URINARY CALCULI.

Fig. 16.

lculus in which spontaneous fracture has occurred in the internal layers only, the separated portion appears to have become again cemented, and encrusted with a subsequent deposit. After Mr. Southam. p. 434.

Fig. 17.

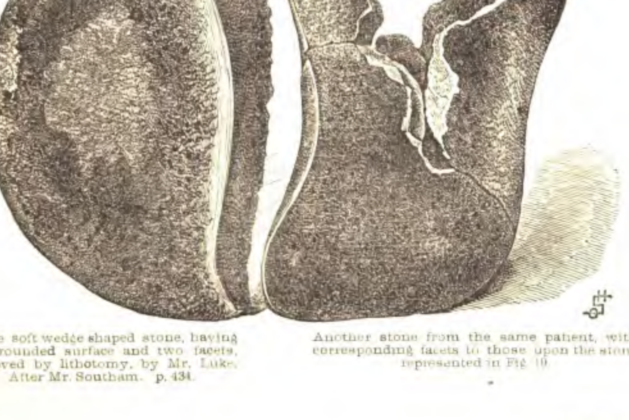
tral portion of a calculus, removed by Mr Southam, from a boy, aged 15. p. 434.

Fig. 18.

Larger fragment of the same stone, which was in the bladder. The separation was not of recent date. p. 434

Fig. 19.

Fig. 20.



Large soft wedge shaped stone, having one rounded surface and two facets, removed by lithotomy, by Mr. Luke. After Mr. Southam. p. 434.

Another stone from the same patient, with corresponding facets to those upon the stone represented in Fig. 19.

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